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Tracking down errors in Prodos

Reorganising the AppleWorks database

More memory for the IIgs

Customising desktop icons

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+ all the latest games for the Apple II and Mac

More than £700 worth of Mac software to be won

Upgrade your Apple II - latest boards reviewed

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Laser printer prices lopped

APPLE has cut the cost of its laser printers by £500 as part of its determination to remain competitive in the fast-growing desktop publishing marketplace.

The Laserwriter, the launch of which in effect began the desktop publishing revolution, now costs £4,495; the price of the Laserwriter Plus drops to £4,995.

An Apple spokeswoman said the reduction was made for a variety of reasons.

"It is a reflection of falling production costs and, following on from that, economies of scale now that the DTP momentum has built up.

"Also, of course, the field is constantly changing and it is important for us to be competitive", she said.

Apple is poised to invade China

APPLE is poised to take over what is potentially the world's largest micro market – China – with its Macintosh family of computers.

It has developed a Chinese operating system – the first of its type – and now experts are forecasting that Apple may become the dominant force in a market of one billion people.

A number of problems like the keyboard and operating system; as well as the fact that the Chinese alphabet has more than 14,000 characters, had to be overcome.

Early attempts by the Chinese at putting all of the characters into a mechanical system resulted in a machine weighing hundreds of pounds and only capable of print speeds of six words a minute. The introduction of the new operating system, Zhongwen Talk; on the Macintosh opens up tremendous potential for applications programs that will bring China firmly into the 20th Century.

Another problem Apple had to tackle was the language. In China there are no less than six dialects with thousands of variations in each province, so designing an operating system and keyboard that can cope with those difficulties would seem an impossible task.

Until now there were no effective answers.

To overcome the difficulties Apple developed the Zhongwen Talk operating system that allows programs to be written in Chinese. Input is by either a phonetic or special coding system.

To make life easier for Chinese programmers it contains a built-in dictionary of over 6,700 characters and gives users the possibility of creating thousands more.

Because of the current relaxation of trade restrictions with Western countries and China's push for modernisation, the time is right for Apple to infiltrate the vast market.

"Computerisation is vital for China if it is to catch up technologically with the West", an Apple spokesman explained.

Efforts to penetrate the market in the past from Western and Far Eastern companies have met with only limited success.

Pagemaker upgrade on its way

SHIPMENT of the international English version of Pagemaker 2.0a desktop publishing software has been announced by the Aldus Corporation (01-831 2808).

Pagemaker integrates text and graphics to allow the Macintosh to create high quality documents. The new version is a result of requests by customers for additional facilities.

Among the most requested new features are automatic hyphenation and justification, kerning and the ability to work on longer documents.

Pagemaker 2.0a will accept preformatted text files from a number of popular word processors including WordPerfect, WordStar 3.3 and XyWrite.

It is also possible to reproduce high quality images from scanners that support the grey scale and tag image file formats (TIFF). Price £450.

BIG BATTLE BLUE

APPLE in the States is digging in for what is likely to be a long and bitter battle with IBM.

This follows the news that Big Blue has launched a new personal computer aimed directly at Apple's main US markets – education, the home and small business.

Known as the IBM Model 25, it is priced at £859 for a complete system including monitor and disc drive – or a colour display version for £1,059.

As such it becomes the company's low end model in the recently launched Personal Systems/2 range.

American analysts believe that it will take a long time – if ever – for IBM to make any real impression on Apple's traditional market strongholds.

In particular, the company will face an uphill struggle in the lucrative US schools and colleges market – estimated to be worth £1 billion this year – and in which Apple currently claims a 65 per cent share.

ACCORDING to reports from America, Apple is about to move into the plug-in fax unit market and is set to unveil a fax box for the Macintosh series.

Fax units use 9600 baud modems, but apart from the modem and driving software, a good deal of the remaining circuitry can be emulated by a computer.

When the new unit arrives it is expected to retail for under £500, which is a good deal cheaper than the current £2,000 plus for a fax unit alone.

Plotter progress

MACINTOSH owners who require high quality and colour output can now obtain an updated version of MacPlot from Microspot (0622 858753).

Version 3.0 now works as a driver installed on the customer's application disc so that plotting can be performed directly without copying to the clipboard or having to create PICT files.

Two versions of the program are available – the standard which covers paper sizes A3 and A4, and the professional which will cater for all sizes of paper.

It allows you to create documents and graphical charts on all normal and draughting paper sizes in full colour with greater resolution than is possible on a dot matrix printer.

MacPlot 3.0 makes full use of Macintosh features such as pull-down menus and mouse. Price £129 for the standard and £249 for the professional version.

Flights of fancy

FOR people who like to fly their computers rather than work on them, a new application, Scenery Disc 11 has been released by SubLogic of Illinois (0101-800 637 4983).

Used in conjunction with Microsoft's Flight Simulator on the Macintosh, the package allows the computer pilot to fly over a number of American cities.

Scenery Disc 11 changes the pilot's flying environment with highly detailed views of Detroit, Pittsburgh and Niagara Falls. It also features a new default ground pattern that simulates fields and other areas of varying colour on the earth below.

SubLogic says that with the Niagara Falls scene loaded the pilot can fly below the rim of the Niagara river canyon. Price $24.95

Touch of romance

WOMEN with a sense of romance and a tender touch on the keyboard of an Apple II or Macintosh computer may welcome Plundered Hearts from Infocom (0101-671 492 6000).

Set on board a sailing ship bound for the West Indies and faced with the amorous advances of a pirate captain, the heroine is trying to get to her ailing father on the island of St Sinistra.

Plundered Hearts is an interactive fiction game that features pirates, drunks, crocodiles and exotic locations. It is the first game from Infocom to be aimed specifically at women.

The main story for the game was written by Amy Briggs who read dozens of romance novels and researched 17th century ships and costumes to make the story line as realistic as possible. Price $39.95.

APPLE-ALSYS DEAL

AN agreement to develop an Ada compiler for Apple's Macintosh II has been reached between Apple and Alsys.

Ada is a powerful programming language with real-time processing which allows true multi-tasking.

It was originally developed for the US Defence Department and has since been taken up by a number of large companies including ICI, British Telecom, Boeing, Nippon Electric and NASA. The language has recently been accepted by the Ministry of Defence as the prefered language for defence contracts. Alsys hopes that this will create a number of opportunities for companies with validated Ada products.

Martyn Jordan, marketing manager of Alsys, said: "We see the agreement with Apple as being hopefully the first of several such collaborations".

Search is on for second generation software

SECOND generation software – whole new ways of preparing and running programs on Apple's machines – is being investigated in a major technological exploration by the company's new software subsidiary.

The Claris Corporation, recently formed to market applications software, has been given a charter to boldly go where no software developer has gone before.

"Personal computer software is entering its most significant transition period ever", said former Apple US executive vice president and new Claris president William Campbell.

"In 1987, second generation personal computer hardware was delivered, but we have not yet seen true second generation software.

"Our company charter is to be a significant force in defining, developing or acquiring it, and publishing and supporting it for broad classes of customers in business, education and government", he said.

"In the near term, Claris will focus on creating operations separate from Apple, and on marketing existing and future products under its own brand name".

He said Claris would make the transition as soon as practical from a wholly owned Apple subsidiary to an independent company developing, acquiring and publishing and supporting a portfolio of applications.

Apple intended to remain a minority owner of the new company.

The man who has headed the Macintosh marketing effort for the past two years, 35-year-old John Zeisler is now vice president of marketing for the new company.

MAC MUSIC

AN updated version of Mark of the Unicorn's music software for the Macintosh has been released by Argent (01-379 6690).

Performer 2.0 has a number of features which include multiple tempo changes, independent track looping, multiple meter changes within a song and multi record with 32 in-out Midi channels via the printer and modem ports.

There are also a number of new edit features such as snip, splice, shift, and multiple repeat. Price £322.

CROSSWORD CHALLENGE

THE New York Times crossword which for years has challenged some of the best minds in America is now available for the Apple II from MGA Microsystems (05806 4278).

As well as all of the usual tricks, traps and teasing puns some special clues are built into the program. Help is on hand in the form of an online dictionary and spell checker.

The game has been designed to cater for all levels of player from complete novice to expert. Price £19.99.

SALES SOAR

APPLE's sales figures are blossoming, with third quarter net sales of £398 million, a 42 per cent increase over last year's level of £280 million.

Net income for the quarter was £33.4 million which is a 65 per cent increase from the £20.2 million recorded in the same period a year ago.

"These results are more evidence that Apple is doing well. Acceptance for our new Macintosh products is high, they represented nearly 50 per cent of our revenues this quarter", said John Sculley, Apple chairman and chief executive.

"As we enter the important education buying season we see a healthy demand for our Apple II products as well.

Word puzzles

GETTING words mixed up is all part of the fun with Nord And Bert Couldn't Make Head or Tail of It for the Apple II and Macintosh from Infocom (0101-617 492 6000).

Nord and Bert are on a roller coaster ride through the English language in eight short stories set in the offbeat town of Punster.

The player has to try and restore some sort of order to the topsy-turvy town by deciphering messages which are full of double meanings and word trickery.

Each story sets a word-based puzzle and cliches are the order of the day.

For those who find the going a little tough there are built-in hints to aid progress. Price $39.95.

Shaping the skyline

Kevin Roberts explores the possibilities of computer assisted design

ARCHITECTURAL design is a skill traditionally left to the professional artist and his drawing board rather than the computer. Yet in just two years LFA (Leslie Fox Albin Partnership) has gone from being a complete novice with CAD to become the 1987 MicroCad Achievement award winners.

To most people the term CAD (Computer Aided Design) is just another piece of confusing computer jargon which they feel is only used to exclude the novice. But, explained properly and stripped of the salesman's hype, CAD becomes an incredibly versatile means to an end.

A good system properly used can considerably increase the efficiency of any company involved in design work: It also means that the old drawing boards that take up so much room can be replaced by a small desktop computer.

In 1985 LFA saw a High Street printer using a Macintosh and MacPaint as an early graphic layout and desktop publishing system. Having seen the system work and realised its possibilities, the partnership immediately rented a Macintosh 512 for office word processing, stencilling and labelling working drawings.

LFA soon realised that Apple's MacDraw program offered scaled graphics with lettering and toning abilities which were superior to many expensive CAD packages. And it was decided to test the Macintosh exhaustively, while viewing a wide range of MicroCAD alternatives before making any purchases.

One commission that put the Macintosh system through its paces was the design of a 20 bed hospice, which presented the partnership with all of the complications of domestic architecture – but on a much larger scale.

Conventional design involves weeks, if not months, of drawing and redrawing on paper until the plans are approved. But by using a computer to plot and draw the time can be cut down considerably.

MacDraft was used to cope with the contract for the hospice. Its particular strength is that it allows the resizing of whole drawings, as well as pasting details between sheets of differing scales.

LFA was so impressed with the results that it bought the rented hardware, a faster Macintosh as a second workstation, and two Mac Plus machines.

With most Cad systems drawings are displayed in only two dimensions, which means that an overall impression of how a building will look can only be gained from a working model.

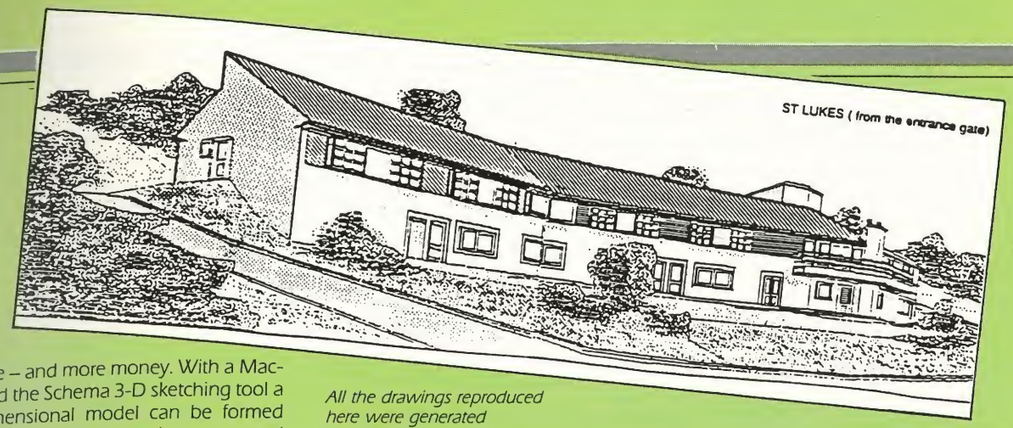
The trouble with models is that they are not only expensive but also take time to build. And if for some reason the plans have to be changed, then yet another model has to be made, which takes even more time – and more money. With a Macintosh and the Schema 3-D sketching tool a three dimensional model can be formed very quickly in the computer's memory and the resultant image displayed on screen.

The ability to see the finished article from any angle is of great benefit to the customer. It also means that if changes are required they can be carried out quickly and the finished results viewed before any final decisions are made.

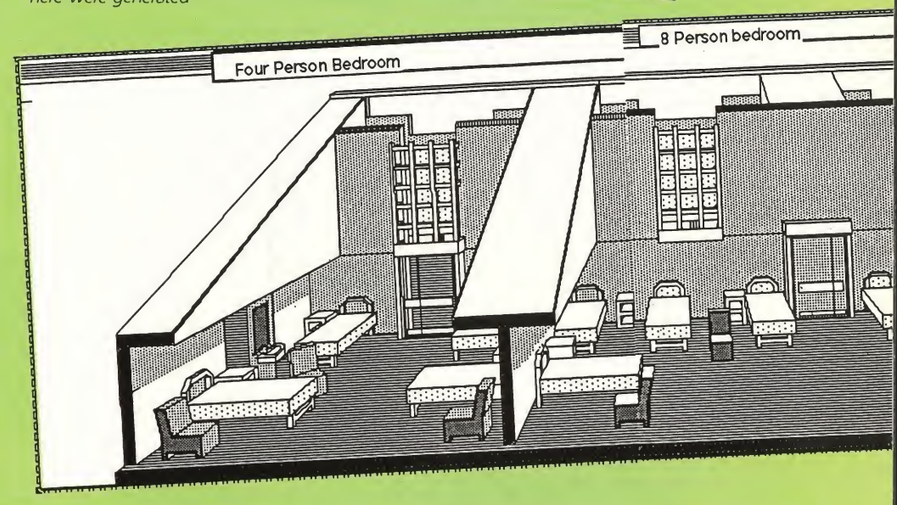
On the hospice project, interior images created on the Macintosh helped the authorities to finalise their attitudes to the bedroom design which were to benefit the patients.

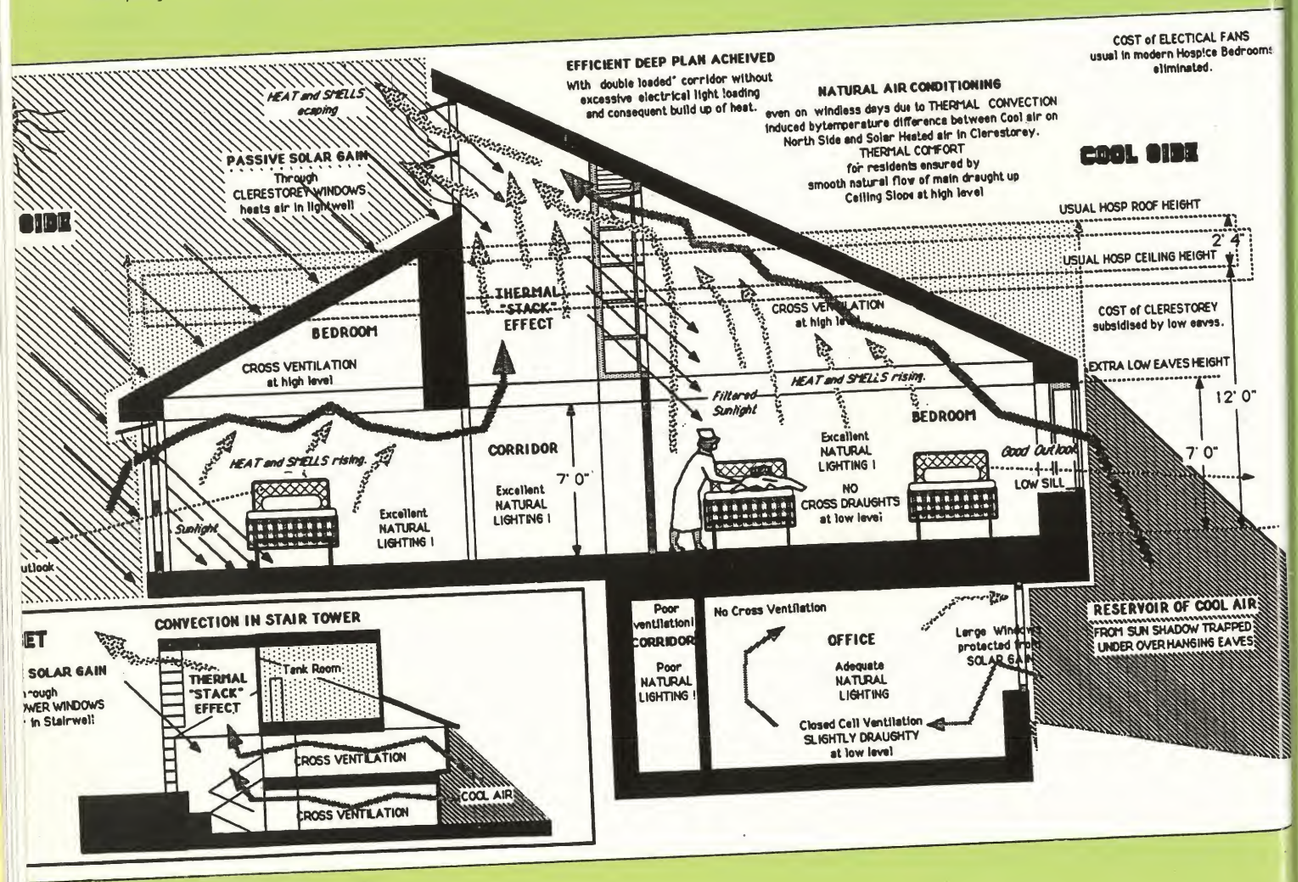
It must be remembered that CAD is just a means to an end. As Mark Leslie of LFA puts it: "The design work still has to take place in the designer's own on-board computer".

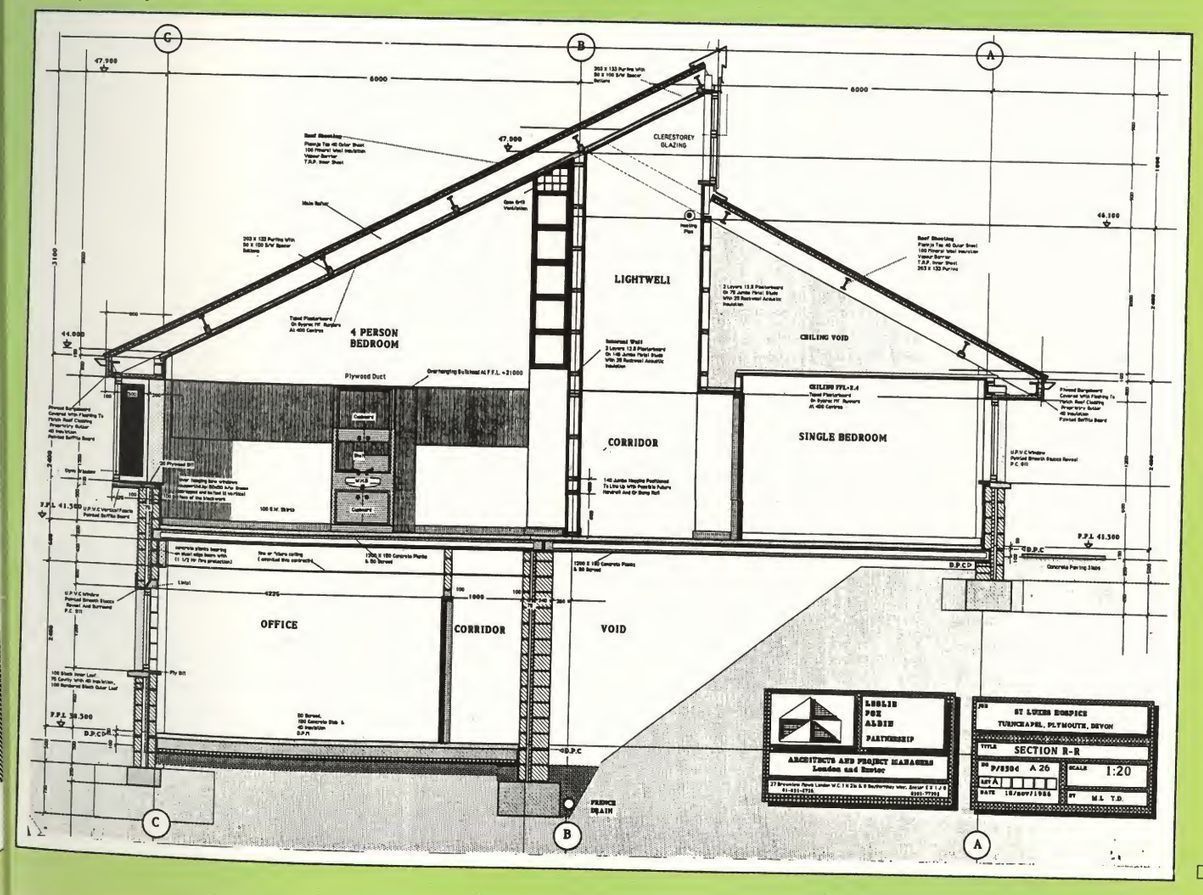
Nonetheless, CAD packages have a definite place in the architect's portfolio – and Mac generated designs could well dictate the shape of skylines to come.



All the drawings reproduced here were generated







Experiment with icons

Duncan Langford modifies the Mac's desktop symbols

IN earlier articles in this series, I have shown how to modify Mac applications using ResEdit. This time, in response to several requests, I'm going to look at icons – no, not religious symbols, those small pictures which the Mac uses to represent files on the desktop.

Icons are a tricky area of Mac programming, and there are regretfully limitations to what is readily achievable. For example, it isn't easily possible to replace a general application icon used by the Mac's operating system, such as the sheet of paper representing a document. If we attempt this, every appearance of the original will change, rather than a single icon being modified.

Existing special icons may be altered, but the strong 'hooks' between application and icon need considerable rejigging to reset. In fact, the work needed to do so is really beyond the scope of these articles.

So can we change an icon? Well, yes, we can. The changed icon will work exactly as the original did, and the alteration will be permanent, provided only that, after the changes have been made, our modified application is not placed in the same folder – or, with MFS, on the same disc – as an unmodified copy of the same application.

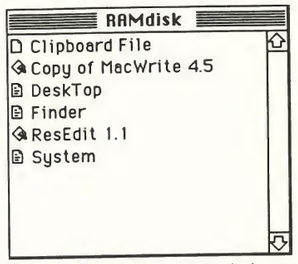


Figure I: The first ResEdit window – double-click to open an application

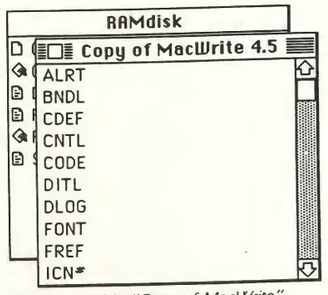


Figure II: Inside "Copy of MacWrite"

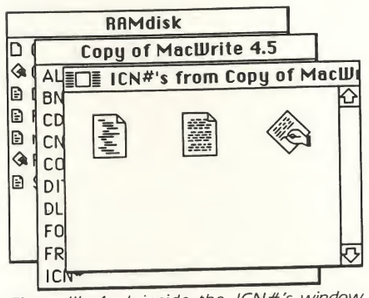


Figure III: And inside the ICN#'s window

If you bear this limitation in mind, with the help of this article you should have no problems in modifying an icon, or even replacing it by your own 32 x 32 pixel drawing. Apart from the enjoyment of personalising applications, a change can be useful, for example, in making clear without using 'Get Info' that changes have been made to a program.

Mac icons are actually stored on each disc in two places: Within the application itself, and in the Desktop File. This file, which is on every disc, is an *invisible* file which keeps track of the disc's desktop – what's on it, and where it is situated, among other things.

Interestingly, it also keeps a copy of the icon from every program which has ever been on the disc. You can only examine Desktop from within applications such as ResEdit, which allow even normally invisible files to be seen.

Working with icons and the Desktop file is potentially damaging to other files, so it is even more important than usual to work on a specially prepared disc, and to check your new program carefully before moving it elsewhere.

Let's assume that you have been working on an application, perhaps adding keyboard shortcuts and other benefits, and would like to change an icon to reflect the fact that this particular copy of, say, MacWrite is different from the original.

Begin by building a disc containing a System, Finder, ResEdit and a *copy* of MacWrite – as I have said before, never work with original programs, or even with originals of your modified programs – copy them! Eject all other discs, or, if using a hard disc, make sure that the Finder on your floppy is active by holding down the Option and Command keys and double-clicking on Finder.

By now, the first stages of modifying a program should be familiar – double-click on the ResEdit icon, and you should shortly see a window similar to Figure I. Note that even normally invisible files, like DeskTop, are displayed here. As you would expect, to open the application "Copy of MacWrite", we double-click on that; a window similar to Figure II should be displayed.

Previously, we have looked inside the MENU and DLOG folders; this time we need to open the icon folder, which is titled ICN#. Instead of another list of names, here you will see illustrations of each of the icons used by the application. In this instance we can see the MacWrite 'writing hand' icon, and the two document icons used for MacWrite and Text files – as in Figure III.

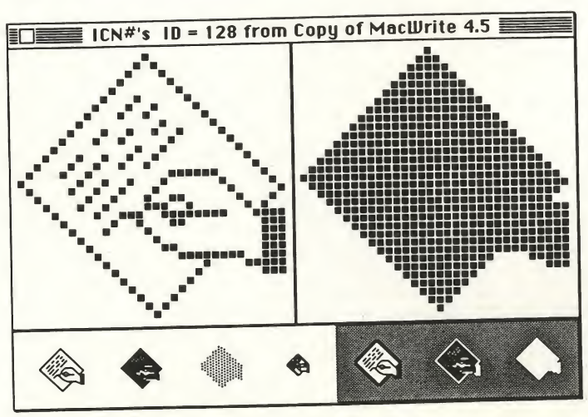


Figure IV: The original icon – note the small samples mirroring the fullsize icon, on various backgrounds

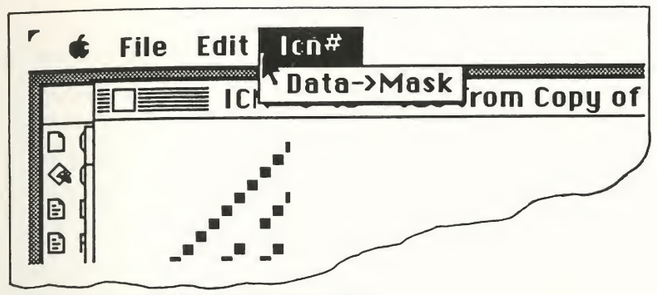


Figure V: The Data->Mask option, added to the ResEdit menu bar when working with icons

As we want to change the MacWrite icon, click on the writing hand, to open it for modification. This time quite a large window is displayed (see Figure IV). Drag it higher up the screen, to make sure the whole window is visible.

A digression here, to talk for a moment about the different illustrations of Mac icons. The principal icon, which is the large one on the left of Figure IV, is the normal icon of the application, the one which represents it on the desktop. When selected, this icon usually inverts – black becomes white, and vice versa. Performing this change is the function of the other large icon, on the right – the 'mask' icon. I'll return to the 'mask' icon in a minute. Below these two large (and modifiable) icons are seven others, representing the different ways in which an icon may be displayed by the Mac. When we alter the large icons, watch how all these smaller ones change, too.

Now it's time to make some changes.

As a left-hander, I've always been unhappy about the 'rightist' approach of Apple's application icons, which clearly discriminate against us southpaws; so I'd like to modify the MacWrite icon to show a left hand, rather than a right one. It doesn't matter whether you make such a large change. In fact, you may prefer to start off with some minor alterations.

Making changes is straightforward, and is carried out exactly as if you were drawing a picture in MacPaint's Fatbits enlargement – just click on a square to change it from black to white.

If you feel ambitious, you can try shift-clicking to draw a box, then cutting and pasting using the Edit menu. I completely changed the icon, but there is no need, of course, for you to alter things quite so much.

Start by modifying the normal icon. Note how the smaller copies change as well, giving you a good idea how the icon will look when displayed on the desktop. Should things go wrong, remember that you can always start again by using the 'Revert' command, from the File menu. When you are happy with the appearance of your new or modified icon, it's time to make a 'mask' for it.

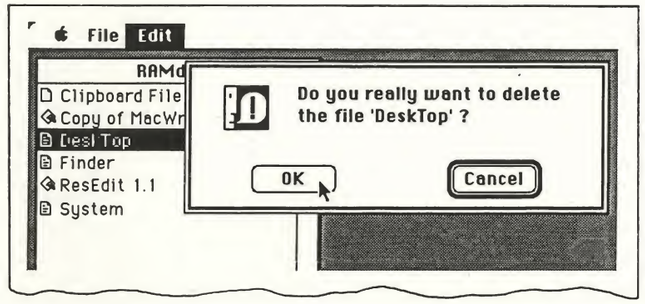


Figure VII: Delete Desktop

The ResEdit programmers have made this a very straightforward task. Whenever an ICN# window is open, there is a new menu item available in ResEdit: 'Icn#'. Selecting this displays a single command, 'Data->Mask' (see Figure V). As you would anticipate, this command automatically builds a new 'mask' in the exact shape of your new icon, saving you considerable mouse clicking.

Although we'll return to this window, for the time being we'll stop here and save our new icon (see Figure VI). Return to the main ResEdit window by the usual method of closing each open window in turn. When the Mac displays the request "Save Copy of MacWrite 4.5 before closing?", the correct reply is Yes.

Remember that I said there were actually two copies of each icon? At this point the copy which would actually be displayed on the desktop is still in the Desktop file, unchanged. We could open up this file and change the icon there too, but it's really much easier to scrap the whole file. After all, we're working on a special disc, and the Mac does rebuild a missing Desktop file automatically.

Incidentally, don't ever delete a Desktop file if you have saved comments in 'Get Info' windows of files. The desktop file is where this information is stored, and should anything happen to the file your information will be lost.

To remove the Desktop file, return to the first ResEdit window (as in Figure I) and ▷

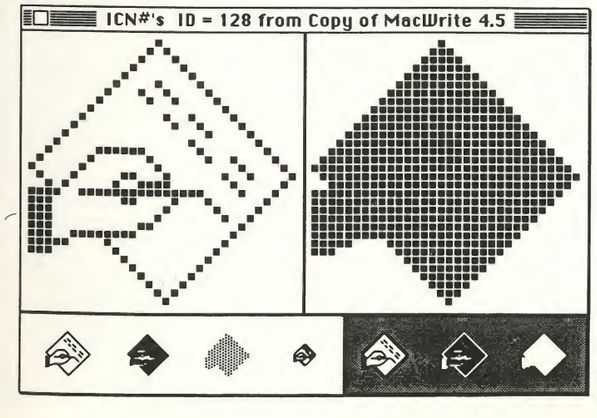


Figure VI: The modified icon

◁ click on the word DeskTop. Go to ResEdit's Edit menu, and choose 'Clear'. The Mac will ask you to confirm that you really do wish to delete the file (see Figure VII) before removing it for you.

That's actually all we need to do – you can now leave ResEdit and return to the desktop. You should see your modified MacWrite icon, exactly as it was displayed from within ResEdit. It should remain modified as long as you keep it well away from any unchanged copies.

The final part of my icon discussion can be skipped by those not wishing to open up their Mac too far. It seems a pity, though, to talk about icons without mentioning a puzzling trick sometimes seen with commercial software – the way a selected icon occasionally changes, and doesn't look at all as it did before it was selected.

There are several examples of this, the shareware communications program Red Ryder probably being the best known. Red Ryder normally displays a rather complicated icon containing two Macs, two telephones, a disc and several lightning flashes. When selected, though, this turns into an icon of a cowboy on a horse (see Figure VIII).

How is this done? Well, the trick is in the masking, and in explaining this I'll have to explain a little of how a mask works.

A way to understand it is to think of the mask in action as overlaying a "normal" icon with its "mask" icon, which displays a white pixel only where there is a black one both in the 'normal' window, *and* the 'mask' window. If you think about it, that makes the usual 'white on black' of a selected icon.

As you will see from Figure IX, which shows the icon window from Red Ryder,

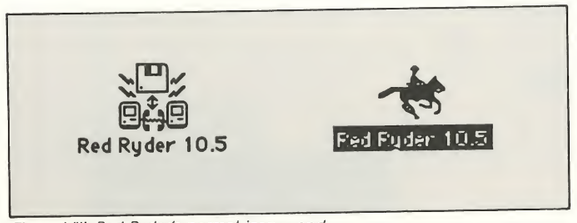


Figure VIII: Red Ryder's normal icon – and the same application when selected

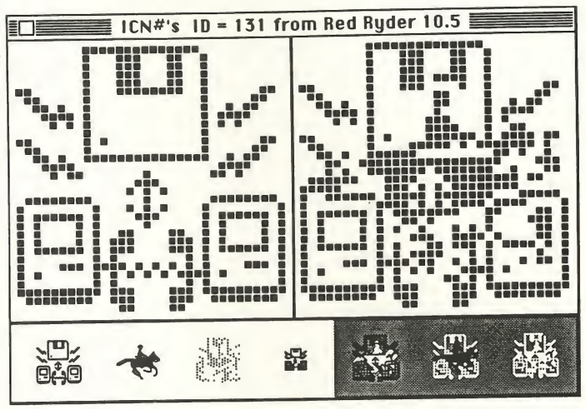


Figure IX: Red Ryder's icon window – note the confused masking, which allows the cowboy and horse when selected

there is no simple black shape here in the second window, but a confusion of shapes, mixing horse, rider and Macs. The effect is to totally remove the original picture, rather than inverting it, and a new replacement icon is drawn over the top.

Can we make a similar change? Yes, of course. A simple example would be to further alter our MacWrite icon, so that when selected the 'hand' vanishes, and we see a completed document.

Back to ResEdit, and follow through the stages outlined above until you again have MacWrite's open icon window, as in Figure IV. This time, while carefully watching the smaller icons, click on the righthand large icon, and make your changes. It's probably best to freely experiment, restoring the original by using 'Data->Mask' if necessary.

I found that it was best to clear the old picture before drawing a new one, although the change was actually far easier to manage than it looked (see Figure X).

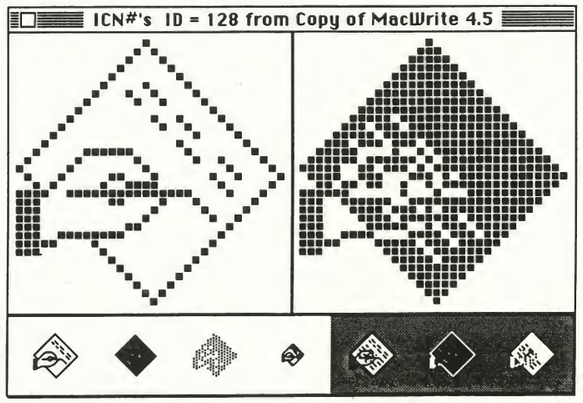
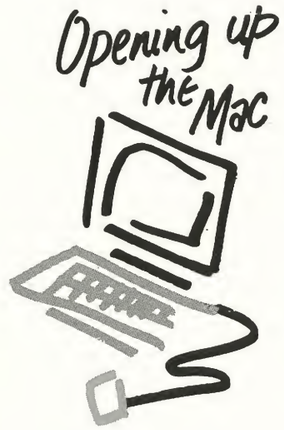


Figure X: It may look a mess – the final "different when selected" inverse icon



When your 'selected' icon (which will be the second one from the left, in the bottom row) is as you like it, close all windows and save your modified MacWrite. Don't forget to delete the Desktop, and leave ResEdit for the last time.

This method will allow you to create and modify icons, as well as to make uniquely different "selected" icons from familiar shapes. Keep the new icons away from the old ones – and have fun! □

Battering ram

Geoff Wood puts Cirtech's PlusRAM memory expansion card to the test

EARLIER this year *(Apple User,* January 1987) I reviewed the Apple memory card and Applied Engineering's RamFactor card. Now Cirtech has replaced its earlier Flipper card (reviewed in *Apple User,* June 1986) with a new card called PlusRAM.

Like the Apple card and RamFactor, PlusRAM comes with at least 256k of ram – and can be expanded in blocks of 256k up to 1Mb. The card can be used in any slot of an Apple II Plus, except slot 0, or any slot of an Apple IIe except the auxiliary slot or slot three.

PlusRAM can also be used in any slot of the Apple IIgs, except the memory expansion slot. In practice, slots one to six may be already used for printer, modem, text display, mouse 5.25in disc drives and 3.5in disc drives respectively, leaving only slot seven for the card. This is usually the best choice, unless you want to use Pascal 1.3.

Cirtech also supplies a version of the card called PlusRAM-xtra which has a megabyte of ram chips soldered to the board, whereas PlusRAM has socketed chips.

Instant switching

PlusRAM-xtra comes with a program called RamDesk Manager which allows you to partition the card into up to four areas for different programs or operating systems, with the facility to switch instantly between them.

Ram cards have two main uses – to run programs such as AppleWorks, that automatically recognise the extra ram and to load programs and/or data files into the ram card so that the programs operate faster and the data can be accessed more rapidly.

AppleWorks 1.3 automatically recognises PlusRAM and offers desktop sizes from 244k to 1012k. The main advantage of a big desktop with AppleWorks is not so much that you can create large files but that you can have up to 12 files in memory and switch instantly between them.

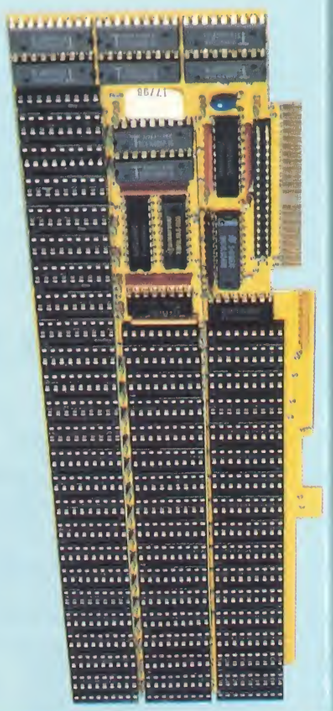
AppleWorks 2.0 automatically loads almost the whole program into PlusRAM. It then runs much faster because it does not have to refer to the disc, except for some print operations. The same effect can be achieved with AppleWorks 1.3 by copying the program into the ram card.

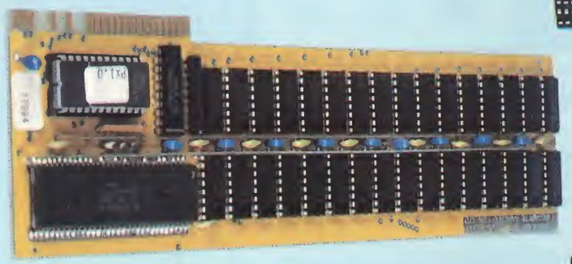
Like RamFactor, the PlusRAM and PlusRAM-xtra cards come with software for adapting AppleWorks. The adapted versions of AppleWorks 1.3 and 2.0 automatically segment files which are too large to fit on one floppy disc.

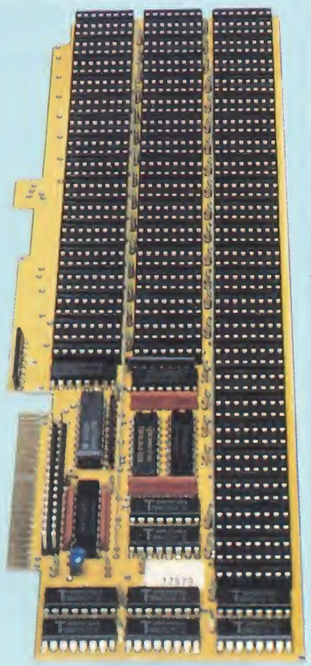
These versions of AppleWorks also let you use a mouse for selecting commands from the menus or for moving the cursor around in the spreadsheet, database or word processor.

The adapted versions of AppleWorks also offer a pop-up calculator, which is better than the standard Macintosh calculator because it offers memory store and recall, square roots, percentages, exponential entries and X-Y exchange.

The pop-up calculator is not available on AppleWorks adapted for the Apple II Plus because it resides in the 64k of ram on the extended 80 column card of the IIe/c.







The software also allows you to adapt AppleWorks 1.3 (but not 2.0) to run on the Apple II Plus. It needs a 16k card in slot 0 (for Prodos) and it also needs a Videx compatible 80 column card in slot three.

The Apple II Plus does not have Open and Closed Apple keys, so their functions are emulated by pressing the Escape key followed by another key such as A or E. The actions of the arrow keys are simulated by holding down the Control key and pressing E,S,D or X.

The extra characters of the Apple IIe keyboard are generated by using Control+Z followed by an appropriate key for example < and > give [and]. Lower case is obtained by using Control+A as a toggle switch.

Alternatively, a wire between pin 24 of the keyboard encoder connector and pin one of the 74LS251 chip enables the shift key to be used to give upper or lower case.

Prodos recognises PlusRAM as a block storage device like a disc drive or hard disc. When you boot up a ProDos disc, PlusRAM is formatted with the name/RAMn, where n is the number of the slot containing the card. You can copy files to PlusRam exactly as you would copy them to a real disc.

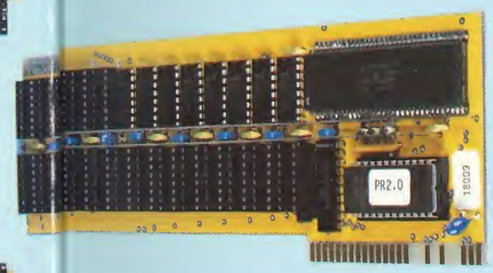
You can store several programs on PlusRAM and switch between them with the appropriate pathname, for instance RAM7/AW. SYSTEM. I tried this with AppleWriter, SuperCalc 3a and Copy II plus. It worked easily and it certainly speeded up the graphics of SuperCalc.

PlusRAM can also be used with Dos 3.3 which treats it like a disc drive with a capacity of 240k on a 256k card or two 400k drives on a 1024k card. You must first boot up a Dos 3.3 disc, then issue the command IN#in – where n is the number of the slot containing PlusRAM.

This will initialise the card as the equivalent of one or two discs. You can then copy programs and/or data files to the card and use it as a disc drive.

If you want to start up the computer from the card, it must be in slot seven with a copy of Dos 3.3 on it. To achieve this, you should start up a Dos 3.3 disc, replace it with the disc that comes with PlusRAM and type BRUN PLUSRAM.

This program initialises the card and copies Dos 3.3 on to it. Also on this disc is a special version of the FID (File Developer) program designed to handle large memory devices.



PlusRAM appears to Pascal as a block structured device, just like a disc drive, with the name RAMn, where n is the number of the slot containing PlusRAM. Pascal 1.3 automatically recognises PlusRAM as a Pascal volume and formats it with a Pascal directory, provided that the card is in slot four, five or six.

You can format the card as a startup device and start up by typing PR#n from the Basic prompt.

Earlier versions of Pascal do not automatically recognise PlusRAM, but drivers are provided on the disc that comes with PlusRAM. These can be copied to the APPLE1 disc for Pascal 1.1 or 1.2. The updated disc then recognises the card.

PlusRAM is used by CP/M in exactly the same way as an ordinary disc drive, with a capacity of 240k for the 256k card and 1008k for the 1024k card. Cirtech's CP/M Plus system automatically recognises PlusRAM and formats it with a CP/M directory.

Earlier versions of CP/M can be adapted by executing a special program which is on the PlusRAM disc.

The manual for the PlusRAM card is only 22 pages, but it seems to give all the information you need. The manual for the RamDesk Manager is only 10 pages. It seems comprehensive but I had one problem: The RamDesk Manager program comes on the disc with PlusRAM-xtra.

When you start up this disc it invites you to make a RamDesk startup disc. You cannot use the original disc to start up the RamDesk manager, but you can make as many RamDesk startup discs as you wish.

Configurations

When you boot up a RamDesk startup disc it automatically loads the RamDesk Manager program on to PlusRAM and displays a screen, offering a choice of six different configurations:

- One program area using all the free space on PlusRAM.
- Two equal-sized program areas.
- Three equal-sized program areas.
- Four equal-sized program areas.
- One half-sized and two quarter-sized program areas.
- One three-quarter-sized and one quarter-sized program area.

There are two versions of the RamDesk Manager screen: One uses a mouse, the other is keyboard driven. The latter is quite easy to use – you must press a number from one to six.

When you have made your choice, the main RamDesk Manager screen appears. Again, there is one version operated by a mouse and another operated by cursor keys. Across the top of the screen is a menu bar displaying the words Areas, Slot/Drive, Active, Restore, Backup, Name and Clear.

Program areas

You should start by clicking on the word Areas. (On the text version you must highlight the word and press the Return key). This displays a list of the program areas so that you can select one of them.

When you select a program area for the first time, you should then click on the word Activate. You will be asked to insert a startup disc in drive one. This could be Apple1: for Pascal, the Dos 3.3 System Master, a ProDos disc or a CP/M startup disc.

The next step is to format the program area with the appropriate operating system, then to copy relevant files to the area. The manual did not stress that you must format the program area in order to start up from it. At first, I simply copied the files – only to find that it would not start up from the chosen area. I understand that the manual has been modified to make this point clear.

Once you have formatted all the areas and copied the relevant files, you can hold down the Open Apple and Control keys and press Reset.

If your PlusRam is in slot seven, the RamDesk Manager screen is displayed so you can then choose a program area. When you click on Activate the program in your chosen area will start up.

To switch programs with PlusRam in slot seven, Open-Apple+Control+Reset recalls the RamDesk Manager screen. Care should taken not to lose files before quitting a program.

If your PlusRAM is not in slot seven or is in an Apple II Plus, you should press Control and Reset to revert to the Basic or the Monitor prompt. You can then type PR#n or nControl–P to recall the RamDesk Manager screen.

Of course, it can be quite time consuming to set up several program areas on the card. To make life easier, the RamDesk Manager program offers the Backup command to make special high-speed copies of the program area.

The Restore command reloads the content of a program area from a set of discs prepared with the Backup command. These programs can also be used to back-up to and restore from a special area of a hard disc.

Finally, the Clear command allows you to clear a program area so that you can reformat it and load in other files.

Conclusions

In the previous review (*Apple User,* January 1987) I favoured RamFactor against the Apple memory expansion card. But is PlusRAM better than RamFactor?

It is certainly cheaper. Although the price of a 1Mb RamFactor has fallen to £319, PlusRAM starts at £99 for the 256k version with £20 for each of 256k chips, making £159 for the 1Mb version, The 1Mb PlusRAM-xtra costs £198, which includes the RamDesk Manager software.

However, RamFactor has three advantages: It offers up to nine program areas whereas PlusRAM offers only four, the AppleWorks adaptation can read a Prodos compatible clock in any slot and there is a battery back-up system available for £179 so the card can retain data when the computer is switched off.

But PlusRAM has advantages over RamFactor other than price. It offers a good pop-up calculator with AppleWorks and it includes software for handling Pascal 1.1 and 1.2 and CP/M 2.20B and 2.23.

It also includes an updated version of FID and software for formatting program areas with Dos 3.3.

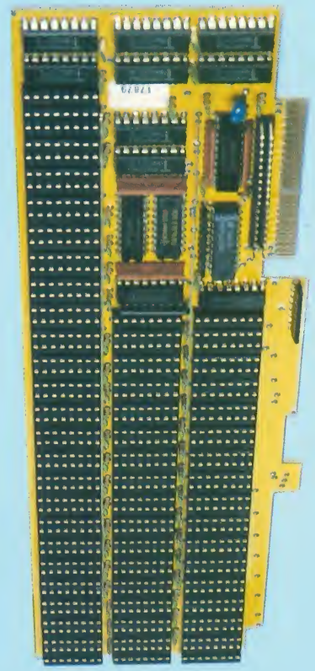
In the end, it's personal preference. But of the three rival cards PlusRAM seems to offer the best value.

Product: PlusRAM
Price: from £99
Supplier: Cirtech (UK) Currie Road Industrial Estate, Galashiels, Selkirkshire, Scotland, TD1 2BP
Tel: (0896) 57790

□

Expanding horizons

Geoff Wood tries two new cards which stretch the limits of the IIgs



THE Apple IIgs has 256k of ram, but that's not sufficient to run programs such as GraphicWrite, Deluxe Paint and The Music Studio. And with AppleWorks 2.0, the desktop is limited to 125k, well short of the possible maximum.

Using the Apple IIgs Memory Expansion card will give you up to an extra 1Mb of memory. With AppleWorks you then have a desktop of 1149k – slightly less if you use some of the card for a ram disc – and most of the program is automatically loaded into ram, only referring to the disc for print operations.

But, if you want still more memory, you can now have up to another 8Mb of ram, thanks to the advent of 1 megabit chips instead of the Apple card's 256k bit chips. These chips are carried on cards which fit in the memory expansion slot.

Applied Engineering offers the GSRAM Plus card, which can hold up to 48 chips, giving up to 6Mb of extra ram: A piggyback card gives another 2Mb. The company also produces the GSRAM card, using 256k bit chips to yield up to 1Mb of extra ram.

Cirtech's card, the PlusRAM GS8, can hold 64 chips to give up to 8Mb of extra ram. The company's PlusRAM GS2 uses 256k bit chips and offers up to 2Mb.

I tested the GSRAM Plus and the PlusRAM GS8, each with 2Mb of ram yielding a desktop size of 2,128k

With all its memory cards, Applied Engineering also supplies a new version of its expander program which modifies AppleWorks 2.0. It offers up to 22,600 lines in the word processor, 22,600 records in the database and 2,042 lines (instead of 250) on the clipboard.

Such huge files are too big to fit one 3.5in disc, but the program automatically segments large files to fit on two or more.

Standard options

If you use Prodos 8 with AppleWorks, the adapted version reads the clock and displays the date and time in the bottom right hand corner of the screen, though this can be suppressed. The display can be either American style (mm/yy/dd) with 12 hour clock, or British (dd/mm/yy) with 24 hour clock.

If you have a database file with the word DATE or TIME in the category name, you can read the current date or time – but not both – into the field by typing @ as the category's only entry.

Another option allows you to set the size of the printer buffer, up to 64k. This reduces the desktop by a corresponding amount, but this is a small price to pay for the ability to use AppleWorks while it prints out a long file.

GSRAM word processing

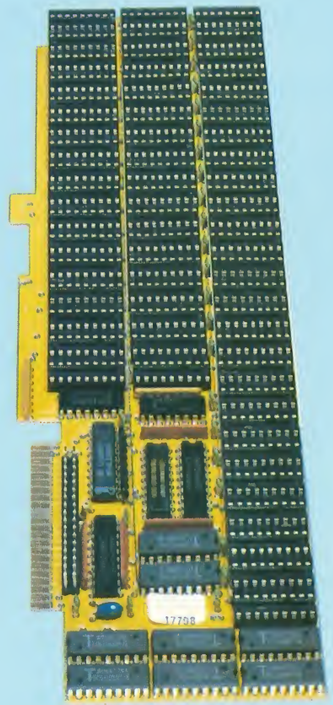
The adapted version of AppleWorks 2.0 loads entirely into ram and does not refer to the disc, even for printing. However, if you use most of the desktop for files, some of the program will be dropped from ram, and you might then have to insert the disc for some operations.

I loaded in a word processor file of about 2,400 characters and copied it until I had 418 pages totalling 22,572 lines. However, when I tried to calculate page breaks with Open Apple+K, it stopped halfway through.

This is because the page break adds another line to each page, so 418 pages would have made 22,990 lines. I cut the file down to 410 pages and the problem was solved.

The file size was displayed as 1,480k, with 608k still available. But when I saved the file (on two discs) the total was only 888k – AppleWorks compacts files as it saves them.

Despite the desktop space remaining, AppleWorks would not then perform certain operations, such as listing all the files on a disc, without listing the file first. I could flip from the beginning to the end of the file instantly with the Ruler, but long files can still be unwieldy, especially in saving and loading. □



◁ The moral is to limit the size of files. You can easily move paragraphs between files, and you can print a series of files with consecutive page numbers.

I created a database by cutting and pasting a file of 500 records until I had 17,000 records and only 33k left on the desktop. I sorted the file into alphabetical or numerical order on various columns, a process which took between two and seven minutes.

The Find command took only a few seconds to display all the records containing a given word, while Select took no more than 15 seconds to extract all the records matching three criteria.

The file size was displayed as 1,984k, but the total size on two discs was only 1,211k. The file took about seven minutes to save or reload. This must be the the answer for sorting thousands of records quickly – no program that holds records on a hard disc can match the expanded AppleWorks for speed.

I created a spreadsheet with more than 77,000 cells, all (except A1) containing formulae. File size was 1,920k and recalculation took almost 30 minutes. Take care – it can be difficult to trace errors in formulae in large files.

The big desktop is useful, and not just for creating huge files. It also lets you have up to 12 large files in memory and switch instantly between them.

Prodos bonus

A bonus on the AppleWorks expander disc is Bird's Better Bye, a version of Prodos 8 by Alan Bird. When you quit the program, it displays a list of all the executable system files on the disc. and you can use the arrow keys to highlight the file you want. The Escape key switches to other drives in turn.

I found this program very useful – and very easy to use. I set up the GSRAM Plus card as a ram disc with AppleWorks, Apple Writer, Sensible Speller and the utilities program from Copy II Plus. I could switch rapidly from program to program, more easily than by using Mouse Desk.

PlusRAM GS8

Cirtech also offers an AppleWorks adaptation program with its IIgs cards. The company decided against expanding AppleWorks, mainly because huge files take a long time to load and save, but the adaptation does enable you to save large files to two or more discs.

It also lets you use the mouse for cursor control on the menus and in all three applications. Clicking the mouse has the same effect as pressing Return, while double-clicking simulates the escape key.

The adapted AppleWorks also offers a pop-up calculator which has memory store and recall, square roots, percentages, exponential entries and X-Y exchange.

If you use Prodos 8 with AppleWorks, the adapted version reads the clock and displays the date and time in inverse near the bottom right hand corner of the screen. The display is in British style (dd/mm/yy) with 24 hour clock.

I found the inverse display distracting: You can suppress it, but then you have to enter the date when starting AppleWorks and your files are not time-stamped on saving.

The Cirtech adaptation also offers a printer buffer which is set at 42k. It is automatically connected to the first printer you use, which means you cannot switch the buffer from one printer to another without restarting AppleWorks.

If you want to stop printing, you can empty the buffer by holding down the Option and Command keys and pressing E, though this may not work immediately if your printer has an internal buffer.

Distinctions

There is an important distinction between Cirtech's printer buffer and that featured by Applied Engineering. The latter uses the IIgs buffer and therefore works only with the IIgs internal ports: The PlusRAM printer buffer is independent, and thus works with either the IIgs ports or interface cards.

With both cards you can use the IIgs control panel to specify part or all of the memory as a ram disc. When you start up a Prodos disc, the ram disc is formatted with the name /RAM5, and you can copy files to it much as you would copy them to a floppy or hard disc.

You can start up the computer from the ram disc, having first used the control panel to set it as the start up. You must also deliberately format the ram disc.

Disc management

Pascal 1.3 automatically recognises the ram disc as a Pascal volume and gives it the volume name RAM5. If you want to start up from the ram disc, you must use the Formatter program from the APPLE3 disc to format it.

Cirtech's CP/M Plus system also recognises the ram disc and fomats it with a CP/M directory. Again, it can be made into a startup disc.

The Cirtech card can also be used with Dos 3.3, which treats it like a disc drive with a capacity of either 160k or 400k. There is a special program on the Cirtech disc that patches Dos 3.3 for PlusRAM GS, and a special version of the FID (File Developer) program designed to handle large memory devices.

A desktop the size of the Sahara

Lew Norris puts an old favourite to the AppleWorks test

USING my Apple IIc, I once tried to put all my audio cassette titles and relevant details on to an AppleWorks database. I was enjoying the task – until I noticed that I had a lot more cassettes than database.

Then along came Applied Engineering with Z-Ram. The cost was high – Around £400 as I remember. Still, I was hooked on AppleWorks (still am) and was mesmerised by the thought of an AppleWorks desktop the size of the Sahara.

In my innocence, I imagined that once the card was installed, you had a computer with increased memory and simply proceeded as before.

Not so!

Use of the card involves studying the manual. Software supplied with the Z-Ram includes a system master for a Pascal Ramdrive (for use with Apple Pascal), a system master for the Z-80 (to run CP/M programs) and an "expander" for AppleWorks. I've found this last disc the most useful.

The expanded AppleWorks (a one-time operation), gives a desktop of 394k. Since the whole program is loaded into memory, the program disc can be removed in favour of the data disc, which can then sit in drive one for the duration.

Later, I started using Pinpoint, nine desktop accessories which work alongside AppleWorks in such a way that they appear virtually to be a part of it.

Since drive two was all but redundant, the accessories could reside there permanently, ready for action at any time. The expanded AppleWorks disc takes about 90 seconds to load – though if you are impatient, you can press Escape before the computer starts to load AppleWorks' functions and save much of that time. The program disc must now stay in the drive as it will be accessed as with the original AppleWorks.

You still have your 394k desktop, though.

Now, finally, I was able to put my cassettes – and record albums – into an AppleWorks database file without running out of memory. This 164k file contains 2,318 records, each consisting of four categories: It covers two discs as the Z-Ram automatically segments files too large to fit on to one.

There are one or two drawbacks with a file of 164k – one being that the file takes over two minutes to load. While most commands are executed quickly, the Sort command (Open Apple+A) can take four times as long as the predicted 25 seconds if the category is thoroughly mixed up.

On the other hand, if you are simply adding a few more mixed items to an already sorted list, the sorting time is very fast.

If you use the Find command (Open Apple+F) and get a list of selected entries in the multiple record form, zooming into single records (Open Apple+Z) is as fast as before, but Zooming back to multiple records can take several seconds.

If, when saving a file, you change your mind and press Escape, you will delete the file from the disc. This can be done accidentally, although a warning always appears on-screen.

It's a little quirk which can in fact be useful: if you attempt to save a file to a disc which already contains too much data to permit the file to be saved, pressing Escape will delete the original file from the disc, thus releasing space for you to use.

A second attempt to save the file will succeed – unless, of course, the file being saved still exceeds the size of the space available.

Saving a file of 164k takes about 150 seconds. Hardly time for coffee but possibly enough for a quick nip on a cold evening.

Returning to the desktop index (Open Apple+Q) can take several seconds, while removing the file from the desktop takes nearly three minutes. If you can convince yourself that the program hasn't hung (it hasn't), you might just have time to get that coffee after all!

If you can't be bothered to remove the file, leave it where it is. You still have a whacking 210k on your desktop anyway. Beats the old 55k days, doesn't it?

The Find command (Open Apple+F) can take up to 15 seconds. Most of the other commands, including Print (Open Apple+P), work as normal and, since the program is in memory, you don't have to wait for the command to be accessed from the disc before you can execute it.

If some of the above seems a little slow, I can only suggest you try doing the same thing with a drawer full of little white cards.

Some of the Pinpoint accessories can take quite a few seconds to access from disc. Using the software provided with Z-Ram, I was able to store them in a 192k ramdisc which has the effect of reducing the desktop to 252k.

It takes around 40 seconds to create a 192k ramdisc using the expander disc. The Pinpoint accessories can then take up to a minute or more to load. The AppleWorks program then takes about another one minute and 40 seconds. Thus the whole business takes something like three and a half minutes, and this doesn't include loading your data disc – life is hard.

Never mind! The whirring, clanking disc drive is gone, and the Pinpoint applications appear almost instantaneously on command. Graphmerge, the application which previously took longer to get at than British Rail Passenger Inquiries, now appears faster than you can say "Privatisation". Well, almost.

AppleWorks patched to allow Pinpoint in ram is not fond of segmented files. Loading such a file seems to remove the AppleWorks program from memory. This does not prevent you from working with the file but the computer needs to access the program disc in order to execute a command. The desktop size is not affected.

Segmentation occurs only when files exceed 135k (that is, one full side of a formatted disc) The above problem with such files only occurs with AppleWorks patched to allow a ramdisc. The problem does not arise with AppleWorks expanded to give a 394k desktop keeping any accessories on disc.

Anyway, for a few measly quid or so, you could invest in a high-capacity UniDisk drive giving you much more storage space on your discs. You are still limited to 12 files on the desktop, by the way, but several of these could each be larger than your entire desktop used to be.

Was Z-Ram worth it? I'm not sure. I would certainly think twice about forking out that much loot on such a device again.

On the other hand, I'd hate to be without it – I just can't imagine ever going back to a puny 128k. I think I'd sooner defect to Amstrad!

There is now a whole Z-Ram family – the Ultra series – which allows for expansion up to 1Mb. Contact Bidmuthin Technologies, PO Box 264, Harrow, Middlesex HA3 9AY. Tel: 01-907 8516.

Facts and figures

The PlusRAM GS8 manual has only 17 pages, but it seems to give all the information you need. The GSRAM Plus manual is shorter still – only 14 pages: It is comprehensive on the expanded version of AppleWorks, but gives no information about using the card as a ram disc.

Both products have a program on the disc to test the ram on the card – testing erases any information there.

As for power consumption, Cirtech quotes a figure of only 268ma, even with 8Mb. Advertisements by Applied Engineering give a figure of 270ma for 6Mb.

The Cirtech card has an expansion port designed to accept Promdisc or Romdisc adapter boards which offer non-volatile storage. The former, priced at £88, has up to 256k of battery-backed static ram which allows you to copy your favourite programs ready for instant use when you switch on.

The Romdisc board is offered in two versions, both priced at £48. One has sockets for eight 27256 type roms or eproms, the other has sockets for eight 27512 type eproms, giving storage of up to 512k.

Conclusions

The Cirtech card is certainly cheaper at £1124 for an 8Mb card: Sliding discounts apply if you buy extra chips with the GSRAM Plus though, so that a 6Mb card costs £1419. However, you'll need a 2Mb piggyback card to get up to 8Mb.

In the end, you pays your money and takes your choice – the massive AppleWorks files allowed by GSRAM Plus, or the mousedriven features and flexibility of PlusRAM GS8.

Now, if I could fit both into one slot...

Product: GSRAM Plus
Price: £399 for 1Mb, £240 for each additional megabyte.
Supplier: Bidmuthin Technologies, PO Box 264, Harrow, Middlesex HA3 9AY.
Tel: 01-907 8516

Product: PlusRAM GS8
Price: £249 for 1Mb, £125 for each additional megabyte.
Supplier: Cirtech (UK), Currie Road Industrial Estate, Galashiels, Selkirkshire TD1 2BP.
Tel: 0896 57790

□

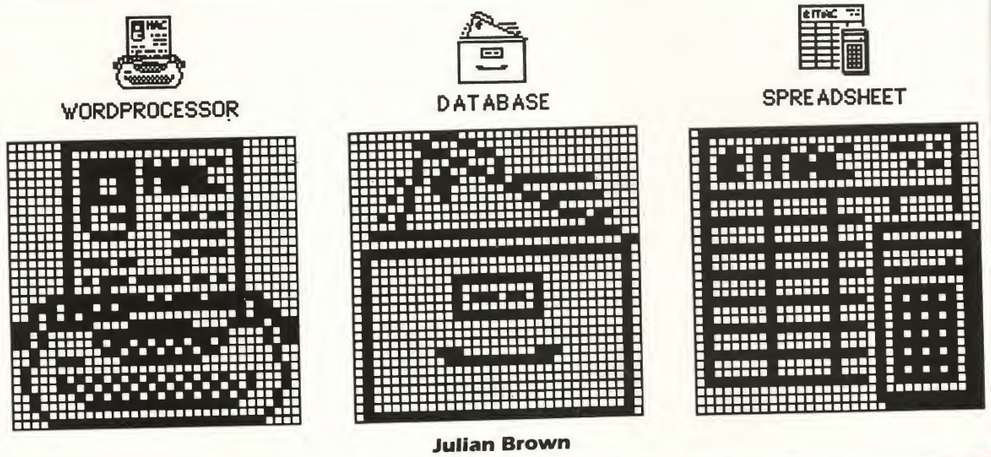
AppleUser winners

Hundreds of impressive designs have been arriving during the last month from all over the world for the Apple Dream Machine Competition featured in the June issue of *Apple User* – we even received a pile of Special Deliveries on the closing date.

The problem contestants faced was to design icons for three software packages – a word processor, database and spreadsheet.

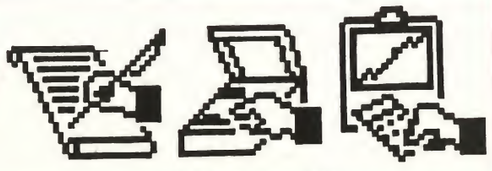
Many people managed to get their hands on a Macintosh to develop their designs, but most were happy to photocopy the 16x16 matrix or use graph paper.

The winning entry



Julian Brown

The two runners-up



Michael Drysdale

Robin Lane

The overall winner was Julian Brown from Preston who takes away a Macintosh package comprising of a 78-key keyboard, precision engineered mouse, 800k internal drive, comprehensive manual and system discs. In addition he will also be receiving a copy of Icon Technology's MacAuthor version 1.3, and The Pawn and Guild of Thieves from Rainbird.

Due to the response and quality of entries we have decided that additional prizes of one year's free subscription to the *Apple User* will go to – Michael Drysdale from Glasgow and Robin Lane from New Romney. Their designs are also illustrated here.

Our thanks to everyone who submitted an entry – we hope you enjoyed the task as much as we enjoyed judging them.

PROBLEM PAGE

TONY HASEMER

This month's column answers questions posed by Geoff Thomas, Kate Wyndal and Chris Lawson

Smoothing out the LaserWriter

PRINTING documents on the ImageWriter appears to be relatively hassle-free, but printing on the LaserWriter is considerably less so.

Where one printer is shared between several Macs via AppleTalk, current best estimates of the number of trips to the LaserWriter and back in the course of printing any one document hover around (3 + N) where N is the user's telephone number. However, the following tips should be useful to all who use the Mac predominantly for word processing or desktop publishing.

Font handling

First, there are two check-boxes in the Page Setup dialog which often cause confusion – font substitution and smoothing. If the first of these is checked before you print, the LaserWriter will automatically convert certain fonts into certain others.

The reason for this is that, unlike the ImageWriter, the LaserWriter is not capable of printing all fonts. In fact most LaserWriters, whether upgraded to LaserWriter Plus status or not, can only handle around half a dozen fonts, of which Times, Helvetica and Courier are probably the best known and the most commonly used.

What is more, the Laserwriter doesn't normally know about New York, Geneva or Monaco, which are probably the most commonly-used fonts when laser printing is not intended. So if you feed it a document written in New York font, the LaserWriter will print it in Times. Similarly, Geneva gets printed as Helvetica, and Monaco as Courier.

Of course, the conversion process takes time, and if your document actually was written in one of the fonts "native" to your LaserWriter you should always uncheck "font substitution" before printing. For similar reasons, it's a bad habit to write always in, say, Geneva font when you know that you're going to want to print on a LaserWriter.

What you see

The inter-word spacing of non-native fonts always looks odd when printed. Choose a native font instead (Helvetica looks nicer when printed than it does on-screen, and is quite similar to Geneva). In any case, no two fonts are exactly the same size, and there is every likelihood that printing your document in a different font from the one you intended will mess up your formatting.

What you actually get out of the printer will not be exactly what you saw on screen, even allowing for the font change itself. Some people who believe that the Mac is not as WYSIWYG as it claims to be are making precisely this elementary mistake.

Incidentally, Write Now can also do font substitution. When you ask it to save your document it also saves a great deal of other useful information, and amongst this is a record concerning the System file you were using at the time. Presumably the record is of something quite simple such as the exact size of the System file.

But if next time you open that document the record doesn't tally with the System you're using, Write Now assumes that something in the System has been changed, and sets about checking to see that all of the fonts which your document needs are still present. If one or more is missing, Write Now substitutes the nearest equivalent it can find.

When you don't check 'font substitution' but still try to print a document written in a non-native font, the LaserWriter has to take the bit-mapped image of the font (the same as you see it on your screen) and try to print that. Particularly in larger point-sizes, this can result in a very jagged appearance. Look closely at the words on the Mac's menu bar, and notice how very jagged they really are.

The LaserWriter can improve things somewhat by employing a smart smoothing algorithm, which attempts to fill in the gaps and so lessen the jaggedness. This often works quite well, but on very small point-sizes, say 10pt or less, the smoothing process can actually make the words less legible by filling in gaps which shouldn't be filled in.

So it's up to you to decide whether to check "smoothing" before you print. The same process will also often improve MacPaint pictures, or indeed artwork from any application which stores your document as a bitmap (most of the commoner ones do so).

Faster printing

But, again, it can ruin details which you wanted preserved, and once again the necessary processing takes up a good deal of time. If you didn't know about these things before, you may be surprised how much faster your LaserWriter prints if you use a native font and uncheck both "font substitution" and "smoothing".

Sometimes the Page Setup menu will (depending upon which application you're using) contain other check-boxes whose meaning may not be entirely clear – for example, "binding margin" or "gutter".

Look at any printed and bound book. The inner margins, the ones where the book is bound together, are wider than the outer margins. Printers normally think of the page as having a left margin the same width as the right margin, and also having an extra binding margin or gutter on whichever side is the inner side. So, if you never intend to bind your document, you don't need the extra margin. Uncheck it.

Another odd term which you may sometimes see is "page wrap factor" According to Write Now's manual, this is "the size of the tallest line which can continue from one page to the next".

What this appears to mean is that if the fontsize you're using, or the inter-line spacing you've chosen, or the height of an ▷

◁ embedded picture, exceeds the page wrap factor, then you should increase the page wrap factor. Quite how this is useful I haven't been able to discover.

Line spacing

"Leading" and "kerning" are not found in the Page Setup dialog, but they do very much affect the appearance of your final output. Leading (pronounced like 'bedding', not like 'bleeding') is a distance measured in points.

The name comes from the fact that in traditional printing narrow strips of lead are inserted between the lines of type to control the amount of space between consecutive printed lines.

In other words, it is the line spacing. It is generally measured from the baseline (the notional line running along the bottoms of most letters, corresponding to the line on lined paper if the print were handwriting) of one row of print to the next.

It will normally be several points larger than the pointsize of the type, because if it were the same there would be no space between the lines, and if it were less each line would overwrite parts of the one above it.

Kerning is the same sort of thing in the horizontal direction: The amount of space between adjacent characters. As Dave Russell pointed out last month in his review of XPress, the term "kerned" is usually applied to pairs of letters which have had the space between them adjusted. XPress also allows what it calls "tracking", which involves adjusting the space to the right of each of a selected group of characters.

Most fonts are what is called proportionally spaced. This means that a letter such an i actually takes up less horizontal space than a letter such as m. In a typewriter-like font such as Courier or Monaco this is not the case.

In proportionally spaced fonts kerning can become a very complex process, since some pairings of letters still look good if their relative spacings are changed, and some do not.

The smaller sizes of some fonts (Helvetica, for example) show this effect on-screen – words like "good" look very stretched out, while words like "still" look squeezed together. Of course, Helvetica looks perfectly alright when printed.

Standard sizes

I expect you know that fonts are usually supplied in a standard set of point sizes: 9, 10, 12, 14, 18 and so on. For some reason which I have yet to find an explanation for, the LaserWriter is not happy with the in-between sizes, even of its own native fonts.

LaserWriters use PostScript programs rather than bitmaps to represent the fonts, and these programs describe each character as a set of curves. It is therefore a simple matter to scale any character to any desired pointsize without any loss of quality.

The point sizes of LaserWriter-native fonts which appear in your favourite word processor's Font menu are there only so that the Mac can display them to you on screen; the corresponding PostScript description sent to the LaserWriter is much more accurate.

However, trouble arises with those in-between sizes if you like to mix your styles. Say, your main text might well be in Plain style, but with the occasional word or phrase in Bold, in Italic, in Underline, and so on.

When printed, these occasional styled sections can be shifted both horizontally and vertically from their "proper" positions relative to the surrounding plain text, sometimes to such a degree as to overwrite parts of the plain text. It looks terrible, and I can only assume that Apple has never tried to use 11pt Times or 13pt Helvetica.

You've probably already noticed that underlining looks horrible when printed on the LaserWriter. This is because the underline is continuous, and doesn't leave gaps for the descending tails of letters such as q or y.

I recommend avoiding underlining wherever possible. After all, we are so used to seeing it only because until recently we had nothing better than typewriters for our documents and inter-office memos. Now that we have the Mac, we can use more elegant-looking methods of stress; Italic is my own favourite.

Check list

This next advice will sound trivial, but it has saved me many an unnecessary trip to the LaserWriter and back. The advice is to follow a simple check list every time you feel ready to print. Check that there is plenty of paper in the paper-tray, check that the printer is selected via the Chooser (particularly if you access it via AppleTalk); and check Page Setup.

Some word processors are notorious for forgetting that a document is intended to be printed on A4 paper, and repeatedly default to US paper size. Word 1.05 always did this, though version 3.0 never does.

Finally, although I've said this before it is worth saying again: If you use AppleTalk as a means of sharing a single LaserWriter between several Macs, do make sure that all of the Macs use the same versions of the Laser Prep and LaserWriter software.

If you don't, the printer will continually demand to be re-initialised, and with the earlier versions of the software this means a trip to the machine to physically switch it off and then on again. The wait for a LaserWriter to re-initialise seems interminable.

If you've got a problem related in some way to your Mac and its many uses, send it to Tony Hasemer at Apple User, 68 Chester Road, Hazel Grove, Stockport SK7 5NY. ◁

AppleUpdate

Professional touch

WORD processing plus is the selling point for Manuscript Manager from Pergamon Press, designed very much with authors' needs in mind.

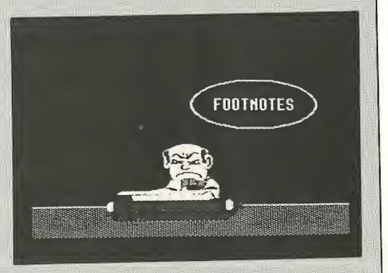
And while it has a distinct American flavour, Manager does promise to take the tedium out of typing for anyone producing reports, technical articles and manuscripts

The program prompts the entry of references and ensures consistency in their presentation. Headings – set in standard format – can be called up at a keystroke to show the outline of a document at a glance.

Manager automatically numbers figures, tables and so on – and all text references to them.

All standard word processor functions are supported, including the facility to combine multiple documents for larger manuscripts. A valuable extra is inbuilt proofreading for style errors.

Manager is easy to work with, functions being called by sensible key combinations: Control+O, for example, will switch the cursor from Insert to Overstrike mode.



Help is always at hand in the shape of 70 "context sensitive" help screens which appear automatically for title pages and citations.

While Manager is aimed more at the professional writer than the casual tapper, it does feature useful facilities that other word processors lack.

Nice 'n' easy

Max Parrott tests out a filing system with a difference

Product: Notes'n'Files.
Price: £95 or £189 when bundled with GraphicWriter
Requirements: Apple IIgs with at least one but preferably two 3.5in discs or a hard disc.
Supplier: Software Distribution, 5 Cattle Market, Hexham, Noirthumberland NE46 1NJ.
Tel: 0434 606526

LAST month I described the IIgs word processor, GraphicWriter, from DataPak Software. According to its manual, that word processor is accompanied by a set of modules (bought separately) called offices, which perform tasks such as mail merging and filing.

In fact none of the pull-down menus offers a route to these offices, which I interpret as meaning that the manual is out of date and the error has not been noted.

To offset these deficiencies DataPak has produced an accompanying program called Notes'n'Files which can act as a filer and mail merger for GraphicWriter, although it is just as useful as a standalone unit.

In fact the links between the two programs are rather tenuous. Text files – and I mean text, not graphics – may be transferred between the two. But text may be created from within Notes'n'Files, making GraphicWriter almost redundant.

Similarly mail merging is really carried out totally from within Notes'n'Files so that in use GraphicWriter is limited to creating, for example, fancy letter headings. If you do this you have to pass the paper twice through the printer, once under each program.

Notes'n'Files is not a fully-fledged, free-format database with powerful search operations. But it is useful as a simple filing system with reasonably powerful search capabilities. And it is also capable of generating form letters with targetted, mailing labels which can be tracked by date.

The program comes on a protected 3.5in disc (there is an option to mount the program on to a hard disc) which boots to give Prodos 16 and the Apple Launcher which I briefly described last month.

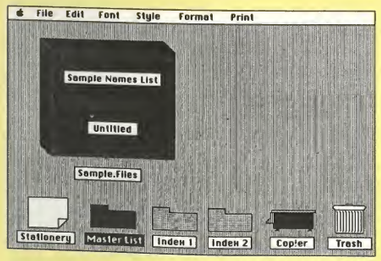


Figure I: Notes 'n' Files main screen

Starting the program soon shows a screen (Figure I) with the Apple, File, Edit, Font, Style, Format and Print pull-down menus ranged across the top; a double-drawer, metallic looking (nice touch that) filing cabinet in the middle of the screen and six icons at the bottom.

These are labelled Stationary, Master List, Index 1, Index 2, Copier and Trash. The program is mainly controlled by the mouse, although some functions may be called from the keyboard.

The filing cabinet is labelled Sample.files and I assume that if it were not on the disc you would simply pull down the file menu and open whichever filing cabinet you wanted. As it is I had to close Sample.files and then open the one I wanted when using Notes'n'Files normally.

A drawer of the current filing cabinet (there can be only one cabinet and one drawer from that cabinet active at any one time) may be opened by double clicking the mouse button when the cursor is on it (Figure II).

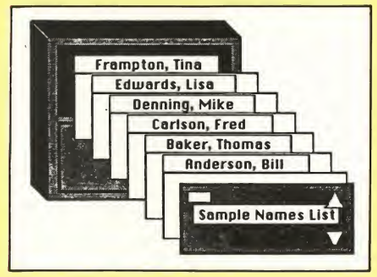


Figure II: Folders fan out in alphabetical order

The drawer pops open and displays some of the folders it contains, arranged with their titles showing in alphabetical order. The title of a folder is the first field in its record and is generally the name of a person but this can be changed.

The folders may be scanned towards A or Z by holding the mouse button down while the cursor is over one of two arrows on the front of the drawer, or a folder title may be picked out by name. Clicking on a folder's top will open it out into a window at the side of the screen. This shows two areas, the folder summary and a document area.

Clicking on the summary area opens out another window which details the folder record and the documents held within it. The default record field names are shown in Figure III, but these may be changed via the Edit menu.

A folder summary is, however, of fixed format so even if the names are changed the layout stays the same.

I have only two real criticisms of Notes'n'Files and one of them is that I think ▷

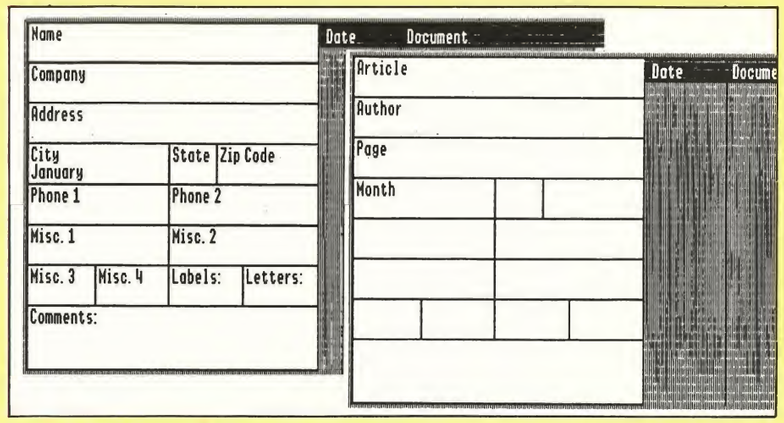


Figure III: Default record field names can be changed

◁ it would be generally more useful and quicker if the folder summary window opened directly and the first window was cut out all together. However it does not take long to move the mouse and click.

It probably was designed like this because more than one folder can be active at a time and it is probably easier to see the smaller, first windows than the second kind which fill the screen. I should say that windows may be dragged round the screen and left where they are most conveniently placed and also opened and closed swiftly.

Creating a new cabinet and naming the drawers is well described in the manual. The job is made easy by the similarity of the task to the use of the Apple Launcher program and by the well laid out windows.

A new folder for the new cabinet, or for an established one, is obtained by clicking on the Stationary and New Folder icons. Once up on screen the folder summary may be edited or details of the first record filled in.

Once the entries have been detailed, the folder may be saved and put away into the drawer by use of the mouse or keyboard, and another empty folder will present itself.

Both entry of data and subsequent editing are easy. The tab and arrow keys and the mouse allow easy movement around between fields and the mouse allows quick jumping to insertion and deletion points within text already established on the screen.

When saved, a folder is written to disc straight away. This slows the program somewhat, but is probably much safer as far as data integrity is concerned. Using the keyboard buffer option of the II control program allows data to be entered while the folder is being saved, generally without any loss of characters.

Although the format of the summary is fixed, the data entered into each field may be of any length up to a maximum of 40 characters and disc space is not wasted. The fields are delineated by carriage returns, so it is possible to import data from other programs.

I tested this by creating a text file from Basic containing 100 such records, each with 15 fields. The file was imported quickly and faultlessly.

Searching for folders and moving between them is quick, no doubt because they are arranged alphabetically on disc. The disc arrangement is also protective of data: I deliberately changed folders and switched off the machine without closing down folders, drawers and cabinets to see if I could make the disc files useless; I could not, which bodes well for general use, when mistakes or power cuts can always happen.

All the folders in a cabinet (that is from both drawers) may be listed using the Master File icon. Part of the list appears on-screen and, of course, may be scrolled vertically and horizontally (Figure IV).

Searches may be performed directly for a given folder and a sub master list can be created using the "and" and "or" conditions together with a possible formula for each field which is entered within a window similar to the left half of Figure III.

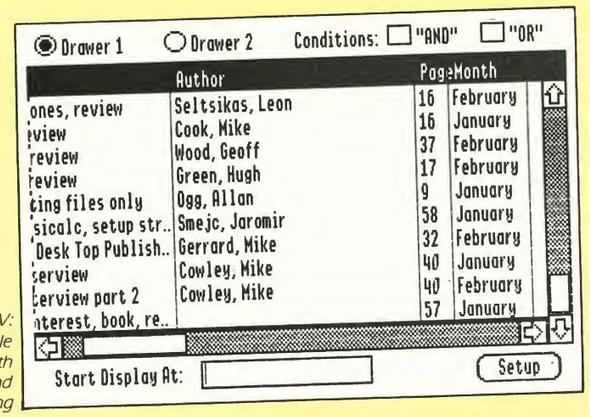


Figure IV: Master File allows both horizontal and vertical scrolling

The possible formulae represent searches for exact matches, any occurrence, equal up to a given value, lesser than, greater than, lesser than or equal to, greater than or equal to, not equal to and finally not equal to any occurrence. Ranges may be dictated within a field by combining formulae, separating them with a comma.

As well as the Master List, there are two indices which may be maintained for each cabinet. You set these up by column, in whichever order you chose, using the field titles from the folder summaries. The first, selected column (and only the first) may be sorted into ascending or descending order, alphabetically, numerically, or by month.

The on-screen display may be adjusted by varying the widths of columns (compare Figures IV and V) but unfortunately a list, when printed, shows only three columns of fixed width, although conditions may be selected to control what gets listed. This almost total lack of control over the format of a list is my second real criticism of Notes'n'Files.

Fortunately, much more control is available over label printing. You can print them from the Master List or from an index, and select both the number of labels to be printed horizontally and the physical dimensions of each label. A trial printing of two dummy sets helps with the set-up without wasting expensive labels.

The thing which sets Notes'n'Files apart from most other simple databases is its ability to store documents within each folder – the only limit is disc space. The documents are created from within Notes'n'Files itself and are printed on the Imagewriter in very high quality.

There is an option to print on the Laserwriter but I was not able to test that. This is interesting, since GraphicWriter does not have this option, although as I described last month it is promised when Apple comes up with the goods.

Presumably, and I'm guessing here, Notes'n'Files prints using Laserwriter fonts whereas GraphicWriter uses Laserwriter graphics and DataPak is waiting for Apple to write these.

The word processor within Notes'n'Files is rather similar to Graphic Writers but lacks graphics and the ability to set regions or columns. There are only two fonts and three sizes (9, 12 and 18 point), but there are five tab positions. And cutting, copying and pasting and left, right, centre and full justification are all supported.

Printing, as with GraphicWriter, is in draft standard or high quality mode: Unlike GraphicWriter the printing is correctly carried out on the Imagewriter.

At print time, Notes'n'Files can perform mail merging using the data from the folders. In particular the first name field which will hold both surname and forename can have the two treated separately -- a comma in the field delineates the two.

By creating a form letter with field titles surrounded by braces, (see Figure VIII), a one shot letter may be printed by dragging its icon from its folder (or from the stationary folder, in which case the frontmost folder only is used) across the copier icon. Alternatively, by starting the printer all the folders in the cabinet may be used to create a multi-shot letter.

In addition, folders may be flagged for labels or form letters. This means that at print time the fact and date of printing are recorded automatically into the folder. Later on, this flag can be used to selectively send out letters, using letters or labels as appropriate.

Because an index controls what gets printed, it is possible to target print letters and labels. And, course, selectively printing, (using the date and flags as criteria), allows for an efficient follow-up service.

I found Notes'n'Files to be faultless and reasonably fast but maybe slightly overpriced at £95 when compared with, for example, AppleWorks. If GraphicWriter improves, as I suggested last month, then the £189 bundled price will be good value.

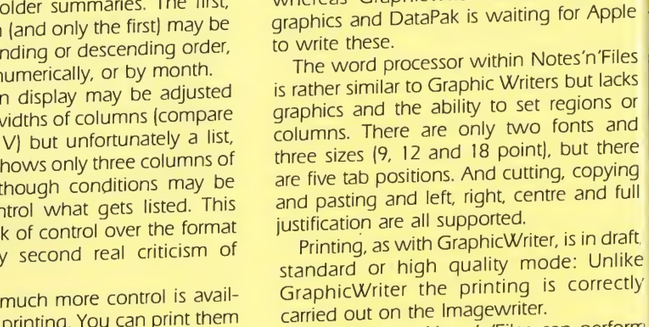


Figure V: Varying the column widths for the screen display

Apple User,
Europa House,
68, Chester Road,
Hazel Grove,
Stockport,
SK7 5NY.

Mr. {,name} {name},
{address},
{city},
{state},
{zip code}

Dear {,name},

I feel it is time to bring to your attention the latest example of our expanding catalogue. We have expanded the new products section, and revised the liquid chromatography and gas chromatography sections.

We have also included products from our sister company, Data Acquisition of America, in various places throughout the catalogue.

Figure VI: Sample form letter using the standard field names

Product: GraphicWriter
Price: £109.95
Requirements: IIgs with at least one 3.5in drive and 512k of memory, ImageWriter (preferably ImageWriter II) printer.
Supplier: Any dealer, or Software Distribution, 5 Cattle Market, Hexham, Northumberland NE46 1NJ.
Tel: 0434 606526
GraphicWriter features pull-down menus, windows and icons – and graphics. The package was reviewed in depth in last months *Apple User*. □

Hard and fast

Mark O'Donovan puts a budget-priced drive through its paces

IN the Apple world, the acronym SCSI is nowadays invariably linked with hard discs. Since their appearance two years ago, when Apple gave us the SCSI (small computer system interface) port on the Mac Plus, third-party companies have showered the market with suitable hard discs, filling the gap that Apple deliberately left for them.

The only problem for the potential buyer is which one to go for, when every company on the market is claiming that their product is quicker, cheaper and more reliable.

So I was perhaps a little sceptical as I unpacked the Qisk 20Mb hard disc. My first impression was that it was an Apple 20Mb hard disc – just a bit slimmer and fancier.

Well, I was partly right. The Qisk's drive – a Rodime 652A – is the same as that in the Apple. Both have the same footprint, though the Qisk is slightly slimmer, and both have the same choice of colours, beige or platinum.

But the similarities end there.

The people who designed the Qisk drive must have something some designers in the computer industry don't: Common sense.

When it comes to practical use of any computer appliance, it all too often seems that the designers forget who the hardware was intended for. After all, when you have a new piece of equipment, you're not *that* interested in how it works – you just want it to work efficiently and well.

The Qisk scores heavily here. Its producers have even gone to the lengths of formatting and testing it so it is immediately ready for use, leaving you with the knowledge that your drive will work.

All you need to do is copy across your System, Finder and Printer drivers (from floppy to Qisk), then your Qisk is ready to boot-up your Mac.

A light at the top left of the front panel flickers to show when the drive is at work, so you're never left wondering if the disc is being accessed.

Then there is a simple-to-use SCSI device switch, which can be used to change the device number of your Qisk. This means that – in theory – you could daisychain up to seven hard discs together.

That's 147Mb of mass storage that you can treat as one huge disc or as separate hard discs.

And compatibility is not a problem when it comes to running other hard discs next to Qisk – I successfully worked with a combination of an Apple SCSI, a Rodime 45Plus and Qisk.

A simple but ingenious idea throws the concept of software protection out of the window: A Yale lock complete with key stops even the best hacker cold.

A turn of the key stops any unauthorised access, and the Qisk will not even show up on the Desktop unless the lock is turned to the upright position.

I didn't notice that the Qisk was any speedier than other SCSI drives I've used, though Computer Capability does claim that it is slightly faster than the Mac Plus's SCSI limit of 320k per second. The difference is achieved by bypassing some of the rom which slows down all interaction between hard discs and the processor.

Compared with the Mac SE with an internal Apple SCSI drive, speed differences are not big enough to be significant.

One difference is noticeable: when Qisk switched from Sea-gate to Rodime 652A drives the office became a quieter place to work in, especially with the use of a low speed fan. If it's still not quiet enough for your taste, you can have the Qisk up to 20 feet from your Mac.

The Qisk could sell on its technical specifications alone – they're certainly good enough. But it's on price that Qisk really impresses: £684.25, to set against a list price of £1,144.25 for an Apple SCSI drive.

No prizes for guessing which one I would go for, even if the Qisk does have only a six month warranty. I've yet to know of a Qisk that has been returned to the service department – and I've sold a lot of Qisks.

Product: Qisk 20Mb Hard Disc
Price: £684.25
Supplier: Computer Capability, 12 Bexley Street, Windsor, Berkshire SL4 5BP.
Tel: 0753 841659

National Apple User Groups:

Apple 2000. The Apple User Group, P.O. Box 177, St. Albans, Hertfordshire AL2 2EG. Tel: 0727 73990.

MacTel. Bulletin Board for the European Macintosh Community, 15 Elm Tree Avenue, West Bridgford, Nottingham NG2 7JU. Tel: (voice) 0602 810237.

The Macintosh User Group UK. The UK's largest Macintosh User Group. The professional organisation with local groups. 55 Linkside Avenue, Oxford OX2 8JE. Tel: 0865 58027.

Local User Groups:

MacCam Macintosh User Group (Cambridge). Patrick Winterson. Tel: 022026 2436.

Suffolk & Cambs Gateway Computer Club. Robert Hall. Tel: 0638 717723 (Any time).

Berks & Hants Apple User Group. Mike Hollyfield. Tel: 0734 780301 (Evenings & Weekends).

Midapple. Tom Wright. Tel: 0527 7191

Herts & Beds Apple and Macintosh Computer Group. Norah Arnold. Tel: 0582 573918.

Cambridge Apple User Group. Ian Archibald. Tel: 0223 311157.

Midland Mac. Ivan Knezovich. Tel: 0299 403418.

London Apple Computer Club. Chris Williams. Tel: 01-882 0333.

Bristol Apple Users & Dabblers. Michael Farmer. Tel: 0272 230000 ext. 2585 (Day).

Croydon Apple User Group. Graham Attwood. Tel: 01-850 5622 (Evenings & Weekends).

North-West Apple Users Group. Max Parrott. Tel: 061-236 3311 ext. 2055 (Day) 061-432 3487 (Evenings).

Apple Crackers Bulletin Board. Mike Jones. Tel: 0268 779244 (Evenings).

London Macintosh Users' Group. Maureen de Saxe. Tel: 01-458 4890.

North West Apple Computer Club. Jim Roscoe. Tel: 0925 38101 (Evenings).

Essex Apple User Group. Patrick Bermingham. Tel: 0245 261636.

Kent Apple Computer User Group. Richard Daniels. Tel: 0303 60515 (Day) 0303 58349 (Evenings).

Liverpool Apple User Group. Irene Flaxman. Tel: 051-928 9097.

Computers Unlimited Macintosh User Group. James Sanson. Tel: 01-349 2395 (Day).

Bentwaters Apple User Group. John Thomas. Tel: 0394 270240.

True Mac Faith

Ian Byfield follows New Order – and a Mac – into the charts

A MAC Plus is top of the pops for one band at the forefront of using technology creatively. For New Order, the computer has become the heart of their preparations for studio and tour work.

Long gone are the days when a group could hope to gather in the middle of nowhere and produce – without a single watt of power – a sound something similar to that on their recordings.

In fact, as recording techniques became more sophisticated, groups had a lot of trouble living up to their recorded image once they set out on tour. One in particular – Love Affair – found themselves in deep trouble when it was discovered they hadn't even played some of the instruments on their own hit single.

Then it was the fans' turn to become sophisticated. They demanded – understandably – live performances that came up to scratch and approximated more closely what they were hearing on their sound systems.

Such authenticity is relatively easy to maintain for musicians with "simple" instruments which can be guaranteed to reproduce the same sounds whenever they are played in the same way. And usually, when such an instrument wears out, an almost exact replacement can be found.

But as Midi takes over the control of complicated synthesisers, and groups have the opportunity to make up, or "sample" their own keyboard voices, then the reproduction of exactly the same sound and combination of effects becomes a far more technical and difficult operation.

Enter the Macintosh Plus, a battery of software and a willingness to experiment and the problems of New Order are cut dramatically.

Band spokesman and drummer Steve Morris is also a prime mover in the computer field.

As the band, made up of Gill Gilbert on keyboards, Bernard Sumner on guitar and vocals and Peter Hook on bass waited to see just how well its latest single, True Faith, was doing and put the final touches to its latest US tour, Steve explained the importance of the Mac.

"Obviously it is of great use to us when we are composing. The freedom and choice it gives us are great. As we write we use it as a sequencer".

The value of sequencing, as opposed to audio recording, is that once saved the work can be edited on-screen after experiments with combinations of sounds and voices.

But it is in the sampling field that the Mac Plus really comes into its own.

"We have a batch of rack mounted samplers and synths. The great problem with them is that when you get out on tour they have to take a lot of hammer, not only during performances but also in the travelling, as well as in setting up and striking sets.

"We were losing carefully prepared samplings every time we packed up. All right, it's easy enough to pick up another synth, but getting to exactly the same sound again was proving near impossible".

Because modern keyboard instruments offer such an enormous variety of sound and, more to the point, combination of sounds, plus the opportunity to take sounds from outside the instrument and reproduce them at any pitch, the difficulty in recapturing one sound in a thousand can be appreciated.

Add to this the fact that often bands know they have something very close to the sound they want – but know equally well that it's not quite perfect – and editing becomes a necessity rather than a luxury.

However, even when it became clear that a Macintosh was the answer, there were still problems. New ones.

"The trouble with the sequencer programs for the Macintosh is that all of them have good points – but they all have bad points as well", Steve explained.

"We finally solved this by using a combination of three programs and moving about between them with an Import-Export Switcher".

They prefer Opcode's Sequencer 2.5 for programming, Professional Composer for editing and Professional Performer for the actual sequencing because "it is as simple to use as a tape recorder".

The band has just begun a gruelling five-week tour of the American mid west which takes in more than 20 dates and features top group Echo and the Bunnymen.

The Mac Plus has been working hard, ensuring that all the sampled sounds they could possibly use are well and truly saved on disc, so that come the day that one of those rack mounted synthesisers throws a wobbler it won't be back to the drawing board, but back to the Macintosh.

But that's not all. In today's fast moving, quick decision world it pays to be able to communicate around the country with speed and accuracy. In other words, to use electronic mail. So, sitting in the middle of the band's disc case is the comms package Red Ryder.

Clear evidence of True Faith in the Mac's potential? □

The BIOS and CP/M assemblers

Colin Foster and Robert Neale with the final part of their series on CP/M

SO far in this series we have been looking mainly at the functions and operation of the CP/M Basic Disc Operating System or BDOS. We have seen how it organises files on disc, the ways in which we can use it in our programs to carry out input and output and how some of the utility programs such as PIP, STAT and our own WC (wordcount) work.

None of this would be possible, however, without the part of CP/M which is normally hidden from us – the Basic Input/Output System or BIOS. On the Apple II, Microsoft's version of the BIOS (the most popular) is in the upper areas of ram (on the language card area). The exact location will depend on which version you are using – versions exist in 44, 56 and 60k of memory.

Normally our programs should do all their input/output by calling the appropriate BDOS routine. This ensures that the programs will run on any CP/M computer, but more importantly protects us from ourselves.

If we call BIOS routines directly in our programs we have to be very careful not to make mistakes. The BIOS controls the micro's hardware and we could easily destroy data on a disc or maybe even damage a drive if we give it the wrong instructions.

However, there are times when we want to get at the hardware directly and the BIOS provides us with a table of jump vectors which we can call for that purpose.

Finding the table (the offsets are given in Figure I) is most easily accomplished by executing DDT.COM (see your manual or *Apple User*, April 1987 for details) and looking at the first jump command right at the start of memory in the SPA. This is the warm boot command and it points into the jump vector table of BIOS. On a 60K version 2.23 CP/M maintains this table at 0FA00 onwards. The jump at 0000h points to 0FA03h which is the second entry in the table. The first entry is called COLD and will perform a cold boot of CP/M if called, however, on the Microsoft version the three entries in the table are actually filled with NOPs so a call here runs through into the WARM boot routine which follows. This is the routine which is executed if a Control-C is typed at the A> prompt in the CCP.

The next six entries are all low-level routines to perform I/O to the screen, from the keyboard, the list device and the punch and reader device. Their functions are obvious from their descriptions and they are very similar to the BDOS functions which do the same job and which are recommended to be used unless speed is of the utmost importance.

Then follow the disc routines. The BIOS has no idea of CP/M file structure or directories – that is all handled by the BDOS. At this level all we can do is select a drive and read or write a sector on a track of the disc.

Offset Address	Entry	In	Out
+0	COLD-cold boot (NOPs on the Apple)	None	None
+3	WARM-warm boot	None	None
+6	CONCjk^Z=9sole status	None	A=0FFh if char A=0 if no char
+9	CONIN-console input	None	A=char
+12	CONOUT-console output	C=char	None
+15	LIST-printer output	C=char	None
+18	PUNCH-output to PUN:	C=char	None
+21	READER-input from RDR:	None	A=char
+24	HOME-seek track 0	None	None
+27	SELDRV-select drive	C=drive 0,1..	HL=DPH
+30	SETTRK-set track	BC=track	None
+33	SETSEC-set sector	BC=sector	None
+36	SETDMA-set DMA address	BC=DMA	None
+39	READ-read a record	None	A=0 if okay A=1 if error
+42	WRITE-write a record	C=0: normal C=1: directory C=2: unallocated	As for read
+45	LISTST-printer status 8 &	None	A=0FFh if ready A=0 if not (always 0 on Microsoft v2.2)
+48	SECTRN-Sector translation	BC=Sector	HL=New value (always=BC on (Microsoft v2.2)

Figure I: The standard CP/M 2.2 BIOS vector table

Keeping track of data

It is up to us to know where the data is and to make sure that we do not accidently write to the wrong place and corrupt a file or, worse, the directory. If we do corrupt the directory then the BDOS will be unable to find our files and we will lose all the information in them.

SELDRV lets us specify which disc drive we want to operate on, just like the equivalent BDOS function. Unlike the BDOS function the BIOS returns an address in HL which points to a 16-byte area of memory called the Disc Parameter Header of (DPH) for the drive which we have selected.

This contains information which the BIOS needs to use the discs properly. Of interest to us is the word at DPH+10. This is a pointer to the Disc Parameter Block for the ▷

◁ drive which contains the information used by the BDOS to understand our disc format and we discussed it more in the May issue of Apple User.

If we specify an illegal drive number SELDRV will return 0000h in HL.

If we want to move the disc drive read/write head back to the first track (track 0) we could call HOME, alternatively we can step the head in or out to any particular track (including 0) by calling SETTRK with the required track number in BC.

Note that it is up to us to make sure that this value is between 0 and 34 as our 5.25 in floppies only have 35 tracks. A larger number will attempt to drive the head further across the disc which might not enjoy the experience.

We call SETSEC to tell the BIOS which 128 byte record we want to access on the track (this must be in the range 0..31 for our discs). It is important to note that a CP/M v2.2 BIOS transfers all data in 128 byte logical records (just like the BDOS), not in the 256 byte physical sectors which our discs hold. The process of extracting and inserting logical records from and into the physical sectors is handled automatically by the BIOS and is known as blocking and deblocking.

This is one of many major differences between CP/M Plus and CP/M v2. The version 3 BIOS does transfer data in physical sectors. If your programs perform disc read and write operations using the BIOS under v2.2 they will not work under CP/M Plus for this reason.

SETDMA is just like the equivalent BDOS function – it lets us specify where in memory we want to put or get data before we read or write a record.

We can now call READ or WRITE as appropriate to get or put our data on the disc. If register A is zero on return the operation was successful. If an error occurred the BIOS returns 1.

If we call WRITE we must put a code into register C to tell the BIOS what sort of write we want to do. Normally this is all done by the BDOS when it calls WRITE to build up our files.

If we are writing a sector to an area of the disc which is already allocated to a data block in the directory we must set C to zero.

When writing to the directory itself, C should be 1 and if we are writing new data to a part of the disc which is not already allocated in the directory C should be 2. These codes are used by the BIOS in its blocking and deblocking routines.

Calling LISTST should allow us to test whether the printer is ready to receive a character. It is supposed to return 0FFh if ready and zero if not: However, under Microsoft's implementation of v2.2 the call always returns 0 because instead of a jump there is the code:

```
XRA A
RET
NOP
```

The last routine, SECTRN, provides a translation between logical and physical sectors, a sector number in BC is translated and returned in HL. Under Microsoft v2.2 this will return the same number because the code at the vector position is:

```
MOV H,B
MOV L,C
RET
```

All the routines we have looked at so far, whether in the BIOS or the BDOS are built around understanding assembly language, in particular 8080 assembly language. Generally to use such routines you do need a reasonable understanding of such low level languages because most higher level languages do not provide access to the routines other than by calling machine code subroutines.

Turbo Pascal is an exception in that it provides the procedures Bdos and Bios and the functions Bdos, BdosHL, Bios and BiosHL to pass parameters to and receive from the BDOS and the BIOS.

We hope therefore that even if you do not understand assembly language you can use the information given in this series to extend your knowledge and maybe your Pascal or Basic programming techniques under CP/M.

Assemblers

If you want to learn and use assembly language under CP/M you can elect to stick with 8080 code, in which case you can use ASM.COM to assemble small pieces of code and DDT.COM to debug and patch such.

However, the Z80 offers more powerful instructions and generally a routine can be achieved in less memory using Z80 commands – if possible, get hold of a Z80 assembler at least, if not a debugger as well.

Most CP/M based assemblers work in somewhat similar ways, which may appear strange to those used to using the assemblers available on the Apple for the 6502. As an example we will use the 8080 assembler ASM.COM as it comes with CP/M and assemble the utility listed in last month's *Apple User* which will count the number of words in a text file.

The first thing to note is that CP/M assemblers tend not to have an inbuilt editor – unlike the 6502 assemblers which always do. Under CP/M you have to use another editor – most people use Wordstar in the non-document mode (N at the primary menu). Alternatives are the editor provided with Turbo Pascal (a Wordstar lookalike which is generally more convenient for programming purposes) or one of the public domain editors.

Few people use the CP/M distributed editor ED for reasons outlined in March's *Apple User*, but, if you're desperate...

An assembly language source listing is divided into four fields by spaces or tab characters: The way to write them is to get them neatly laid out on the screen with each field beginning in the same column.

The first is the label field. If you refer to the skeleton outline source code given in July's *Apple User* you will see labels such as loopch and loopz and CPM, FCB and so on.

If you refer to the fuller listing given in last month's *Apple User* the label field does not appear to the left of the listing because this is the PRN listing – more of which later. But the label fields can be seen after the numbers which form the code.

Often these labels need to be followed by a colon when they signify memory addresses but not when they signify equates as at the top of the listing.

The second field – opcode – is where the mnenomic opcode or pseudo opcode goes. If you're interested in details there is a multitude of text books available. In our example listing such opcodes are **lda, cpi** or **mov** and an example of a pseudo opcode is **org** at the start of the listing, or **db** and **ds** at the end.

The next field is the operand field, which holds the values which the opcodes work with. For example **org 100h** tells the assembler that the program is to begin assembling at memory location 100h (the usual start for CP/M programs) and **cpi 20h** tells the assembler to create the machine code instructions for comparing the contents of the A register with 20h.

The last field is reserved for comments, which have to be preceded by a semi-colon. If a semi-colon is found in the first field then the whole line is treated as a comment.

Most assemblers make two passes through the code, the first time through they assemble the instructions and make note of the labels they find. The second time through they go back through the intermediate code they generated first time. Here they put in any addresses which they could not calculate the first time.

After both passes they produce a file on disc containing one of two common types of intermediate object code, either Intel HEXadecimal or Digital Research/Microsoft RELocatable code. These are signified by the filetypes.

The easiest way of doing this is to have both ASM.COM and our source file (call it WC.ASM, the filetype .ASM is necessary for the assembler) on the same, current disc in drive A: and to issue the command ASM WC to the CCP.

You must not issue the drive or the file type in your command. If the files are not all together on the current disc you have to pass the necessary information to ASM.COM by putting three parameters where the file type normally is.

For example, the command ASM WC.BZX is valid. The first parameter is the letter of the drive (no colon) where the source code is expected to be found.

The second parameter indicates where you want the output file WC.HEX to be written. If you put a Z here, as in the example, no HEX output will be written this is sometimes useful in the early stages of checking your code.

The third parameter indicates where to put the file WC.PRN; a Z causes no output, and an X causes output to go straight to the printer. (Make sure that it is on-line).

After giving the command the assembler will load and execute. You will first see the message

```
CP/M ASSEMBLER - VER 2.0
```

if ASM.COM cannot find the file it will quickly be followed by:

```
NO SOURCE FILE PRESENT
```

However, if all goes well you will see, after some disc activity, the number of the byte following your code which in this case will be 02F6 and a cryptic message such as:

```
001H USE FACTOR
END OF ASSEMBLY
```

This 001H refers to the symbol space used by the assembler and is 1/256 of the total available.

If you see lines of code on the console then there are errors in them. You don't have to stop and start the console to read it because the full listing, errors or not is present on disc as the file WC.PRN. This you can inspect by the TYPE command or with your word processor/editor. The listing given last month is WC.PRN.

If the assembler runs into problems with the disc you will receive console error messages such as

```
NO DIRECTORY SPACE,
SOURCE FILE NAME ERROR
SOURCE FILE READ ERROR
OUTPUT FILE WRITE ERROR and
CANNOT CLOSE FILE
```

The errors with the code itself will appear at the start of each line of code both on the console and in the .PRN file. These are:

D Data error, an element cannot be placed in the specified data area.

E Expression error, expression cannot be computed.

L Label error, is either duplicate or cannot appear in this context.

N Attempt to use a feature which is not implemented.

O Overflow, too difficult an expression, simplify it.

P Phase error, label does not have same value on each pass.
Usually caused by a missing END pseudo opcode.

R Register error, not compatible with the opcode.

S Syntax error in the line.

V Value error, improperly formed expression.

```
First and subsequent blocks:

: 10 0100 00 3A5D00FE20CA42020E0B215D007EFE2A EF <CR>
|  |    |  |                                  |  |
|  |    |  |                                  |  Terminating carriage return
|  |    |  |                                  Twos complement checksum of bytes in line
|  |    |  Ascii HEX data
|  |    Type (usually zero)
|  Start address for this block
Number of DATA bytes in block [usually 16 (10h)]
Colon at start of each block, acts as marker.

Penultimate block  (same significance as for first)

: 0D 02E9 00 6368 61726163746572733A2024 6A <CR>

Last Block

: 00 0000 00 00 <cr>
|  |    |  |  |
|  |    |  |  Terminating carriage return
|  |    |  Twos complement checksum (zero in this case)
|  |    Type
|  Entry address of program (is 0000 as no entry specified)
"Null" data length
Start of block marker
```

Figure II: The start and end of WC.HEX

As you can see they are not particularly imformative, although with experience you soon learn to spot the errors.

If all has gone well and no error messages are encountered we will now have on disc two more files, WC.HEX and WC.PRN.

Readable code

The .HEX file idea is simple to understand but difficult to explain to someone not used to the idea. Basically it contains the same machine code as our final file but in a readable form.

Each byte is represented by two Ascii characters and the file contains other information such as the load address of the code and checksums to facilitate transmission of the code between machines or down telephone lines.

Figure II shows the first one and last two blocks of our program file WC.HEX

Microsoft .REL relocatable intermediate files are a common form of output from more powerful assemblers and most CP/M language compilers such as the Microsoft Macro-80 assembler and fortran-80.

We need not go into great detail here but basically .REL format is designed to allow programs to be written as separate and independent modules, each of which can nevertheless refer to routines and variables in other modules or in existing library files.

The different modules are then put together into one program and all the external references between modules are resolved by a program called a linker.

Our .HEX file can be turned into a .COM file in two different ways. The first and better way for small programs such as WC is to issue the command LOAD WC and make sure that both LOAD.COM and WC.HEX are on the current disc. After some disc activity you will find WC.COM on the disc ready to be used.

However, if we have just written a small routine which we wish to patch into a larger program, or we have not set 100h as the origin of the program (LOAD always assumes it is) then we can use DDT.COM to translate the .HEX file for us.

You can of course also use it to form WC.COM, in this case issue the command DDT WC.HEX and DDT will load and translate the file into binary for us.

To patch a program, load it into DDT and then load the patch (as the file) overwriting the program which is in memory using the i command followed by the r command. DDT automatically takes care of loading the patch in the right place by using the Load address information present the HEX file. DDT tells us the length of the file via NEXT so we can exit and SAVE the program. □

Easier assembly

Paul Russell reads the latest offering from the prolific Gary B. Little

YOU have to be a bit of a masochist to write assembly language programs on any computer and this must be even more true in the case of the Macintosh. To use a single feature from the vast and complex Macintosh toolbox takes a single line of Pascal or C source code compared with anything up to 10 lines of assembler.

The rewards for writing and debugging 10 times as much source code are compact code size, and greater speed and efficiency. A good example of what can be achieved is the WriteNow word processing application which is reportedly written entirely in assembly language and which vastly outperforms MacWrite, written in Lisa Pascal.

However, the use of assembly language alone does not guarantee better, faster programs – there are far more opportunities for bad programming practice and subtle bugs when you have the complete freedom of the processor compared to the more rigid, structured approach of a high level language.

Search for speed

Typically most Macintosh programs will be written in a high level language like Pascal or C. But when speed becomes critical small portions of the program may be rewritten in assembly language. So whether you are a masochist or just a Pascal programmer who needs to speed up a loop, you are going to need to know how to write Macintosh assembly language.

Mac Assembly Language Programming – A Guide For Programmers was written by Gary B. Little, who previously brought us Inside the Apple IIe, Inside the Apple IIc, and Apple Prodos: Advanced Features For Programmers.

It covers everything a beginner needs to know to start writing simple Macintosh assembly language programs.

By the time you have digested this book in its entirety you should be able to write small assembly language programs or subroutines for bigger programs written in high level languages.

Alternatively, it makes a good casual reference work for the high level language programmer who occasionally needs to poke around with machine code in the course of debugging.

All the examples in the book assume that you are using MDS 2.0 – Macintosh Development System, the original assembly language development system. It was written for Apple by Consulair, which also produces a C Compiler for use with MDS.

Consulair has recently taken back the MDS licence from Apple and is now selling version 2.0 for the bargain price of $79.95. This includes Edit (the text editor), Asm (the assembler), Link (the linker), RMaker (the resource compiler), Exec (the executive program), and all the various include and equate files.

If you are using another assembler, for example MPW or MacAsm, then you will probably have to adapt the example programs somewhat, and the chapters on the MDS tools will not be relevant.

The first three chapters give a brief introduction to the 68000 microprocessor, the heart of the Macintosh, and the tools that make up the MDS package.

Although all the common 68000 instructions are dealt with, an additional reference book will probably be needed for serious programming. (A useful one is 68000 Assembly Language Programming by Kane, Hawkins and Leventhal, published by McGraw Hill, ISBN 0-931988-62-4).

The chapter on MDS covers most of what you need to know to edit, assemble and link a complete Macintosh program and you will probably only need to refer to the MDS manual for more esoteric features.

Once the tools of the trade have been covered we get right down to some programming. Most of the rest of book is taken up by explanations of the most important Macintosh Toolbox utilities – the Memory, Event, Window, Dialog and Alert Managers. And, of course, the foundation of the toolbox: QuickDraw, the collection of graphics routines used for all drawing to the Macintosh screen.

Valuable lessons

Each chapter has at least one example program for you to try out and so get a better understanding of the material covered. Typing in the assembly language programs is a little tedious but you are rewarded by seeing your creation actually do something on the Macintosh screen. It also teaches valuable lessons about the various MDS tools and how to find typos in your program.

Finally, support for Desk Accessories is covered – an important consideration if your program is going to allow you access to the Apple menu, since it must allow Desk Accessories to function correctly while the program is running.

The appendices provide the obligatory Ascii character set chart plus sections on debugging and the MacsBug debugger. You will probably need at least a debugger for serious programming and possibly a resource editor such as ResEdit, and Appendix D gives useful information on the various available utilities and where to get them from.

Overall this is a good introduction to Macintosh assembly language programming. Inside Macintosh will almost certainly be required for complete reference to all the Toolbox routines and a good 68000 reference book would make a useful companion.

Title: Mac Assembly Language Programming – A Guide For Programmers, by Gary B. Little
Price: £17.35
Publisher: Brady/Prentice-Hall, ISBN 0-13-541434-2.
Supplier: Consulair, 140 Campo Drive, Portola Valley, CA 94025.
Tel: (415) 851-3272

□

Apple*tip*

Forcing Prodos to create /RAM without restarting

Prodos has a flag at location $03BC in Auxiliary memory which contains the format status of /RAM – setting this flag to zero forces Prodos to format /RAM the next time it is accessed. This Basic program clears the flag:

```
10 POKE 49157,0:POKE 956,0:POKE 49156,0
```

To demonstrate the effects of this program, enter the following:

```
SAVE TEST,$3,D2
CAT /RAM    (this will display a catalog of /RAM before formatting MAKE SURE THERE IS NOTHING VALUABLE IN /RAM BEFORE CONTINUING)
RUN         (Theabove program)
CAT /RAM    (this will cause Prodos to format /RAM and display a catalog no entries, 119 blocks free, 8 blocks used)
```

Teaching your micro to use the phone

Kate McGill offers a gentle but informed introduction to data communications

ONE of the first things the budding electronic communicator finds out is that there's a big difference between talking to somebody on the telephone and sending data down the line.

Using the phone for voice communications couldn't be simpler – dial a number, wait for a reply, speak and listen. You don't have to worry about what's happening to the electro-mechanical (or digital) switches at the telephone exchange, how the sounds are being transmitted, or whether the number you have dialled uses a different set of standards from your own.

Whether you're calling Swansea Wales, Swansea Idaho or Swansea Tasmania (I'm told they really exist), the basic procedure remains the same. The telephone handset is the best "user interface" ever designed.

But when the phone is used for data communications, the scene changes. For two computers to talk to each other over the telephone line (or any other line), they have to be synchronised, and therefore each has to be individually adjusted to a number of precise settings before communication can even begin.

There is a single world-wide standard for voice communications, but many different ones for data communications. At some distant future date this unsatisfactory situation may change. For the moment, we're stuck with it.

The most important of the settings for each computer is the speed at which data will be sent or received, and to get to grips with some of the reasoning behind these speed settings, it will be necessary to knuckle down to some (very elementary) arithmetical concepts. You don't *have* to understand what follows, but in the long run it will make communications easier for you if you do.

All computer data consists of a series of 1s and 0s, and the function of a modem is to translate these into two different audible tones and back again into 1s and 0s. But one of the prerequisites of successful communication between two computers is that they are in phase as far as speed is concerned.

It is vital that each computer "knows" the exact rate per second at which its opposite number is expecting the 1s and 0s to arrive, and that it sends them at that rate. Voice communication between humans is conducted at varying speeds – dictation speeds can only ever be based on averages – and your brain adjusts accordingly. Computers are as yet unable to make such adjustments.

Now, each 0 or each 1 is known as a *bit* which stands for Binary digIT. These are combined in groups of eight to make what is known as a *byte*. In that way, each byte can represent a character – that is to say a letter of the alphabet, a number, or anything else you can type at the keyboard. For instance the uppercase letter Z is represented in bit (binary) form as 1011010.

Each character is represented by its own unique combination of 0s and 1s. But you may have noticed that only seven bits are used for that uppercase Z.

In fact, only seven bits are required in order to cover every character you can generate from a standard keyboard, leaving the eighth bit free for designating things like graphics characters. For text-only communications, therefore, the eighth bit is always set to 0. On top of those eight bits, a couple more are usually added to each byte for special instructions.

One point needs to be made absolutely clear. The sending computer transmits the sequence 1011010 (upper case Z) to a modem. This is translated into a series of seven high and low tones which are received by the receiving modem. The latter retranslates them into the sequence 1011010, and this is interpreted by the receiving computer as an uppercase Z. A similar process takes place for each character sent and received.

The speed at which data is sent is measured in bits per second (bps). Now, let's say that the sending speed is 300 bps. Since each byte consists of up to 10 bits, this is roughly equivalent to 30 characters (bytes) per second.

And if we assume that the average English word is six characters long, our sending speed of 300 bps means in practice that data is being transmitted at a rate of about five words every second.

I didn't pluck the figure 300 out of the air. 300 bps is one of the standard speeds used in data communications. But before talking about other standard speeds, and – more importantly – the practical application of them, I need to introduce another piece of jargon.

From baud to tiers

In the world of comms, people rarely talk about bps, but rather about *baud*. Strictly speaking, baud is a measurement of the rate of change of a signal, and in certain areas of communications it differs from bps. Broadly speaking the baud rate can be thought of as the number of bits being sent or received per second.

Baud rates are indicated by two numbers separated by a slash. The first is the rate at which data is received, and the second the rate at which it is sent. So 300/300 baud means "send and receive at 300 bps".

Other standard speeds are 1200/1200, 2400/2400, 4800/4800 and so on in a tiered system. In certain comms fields, you come across baud rates of up to 38,000, but in practice you can think of 2400 as the absolute upper tier for comms across a telephone line, and 1200 as the normal highest speed.

However, the two numbers in a baud rate need not be identical. It is possible to fix what is known as a *split speed* baud rate between two computers, one sending at one speed, and the other at a different speed. A common split speed is 1200/75. This means that from your point of view, data is being received at 1200 baud, and sent at 75. From the point of view of the remote computer, the reverse is true.

What's the point of splitting the speed? Well, there are cases where you can expect to receive far more data than you're likely to send, the most common example in the UK being British Telecom's Prestel service.

This information service is similar to the BBC's Ceefax or ITV's Oracle, except that it works interactively – that is, you can send commands and instructions from your keyboard to Prestel, which under normal circumstances you can't do with either Ceefax or Oracle.

All this brings me to the point that you shouldn't necessarily buy the cheapest modem you can find. As a rule of thumb, you can take it that the greater number of baud rates which a modem offers, the higher the price is likely to be. The cheapest modems can handle only 300/300 baud, while the more expensive ones can offer everything from 300/300 to 2400/2400, including split speed rates.

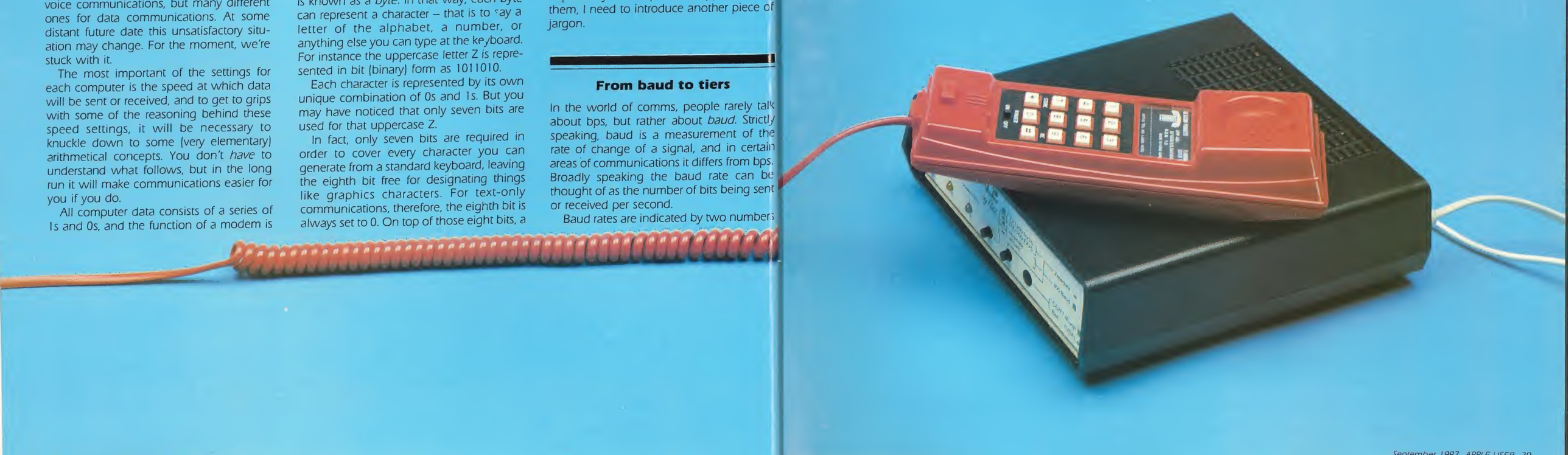
A baud rate of 300/300 is fine for sending or receiving small amounts of data. But let's work out how long it will take at that speed to send a five-page single-spaced document of, say, 500 words per page, at an average of six characters (bytes) per word. That makes 15,000 bytes (15 kilobytes, or 15k) sent at about 30 bytes a second.

Add on some time for "overheads", since all kinds of control bytes have to be sent as well, and you'll be on-line (as the jargon has it) for about 550 seconds, say nine minutes, and paying for the call all that time. Sending at 1200 baud would keep the connect time down to a quarter of that figure.

So it's clear that several factors have to be taken into account when choosing a modem. If you want to access systems such as Prestel, which only work on split speed baud rates, you need a modem which can handle them, and it will cost you more than one which only handles 300/300. Electronic mail (Email) services usually offer a choice of 300/300, 1200/1200 or 1200/75.

But what you might save by buying a 300/300 modem for electronic mail could be offset over a surprisingly short period of time by the extra telephone charges incurred, quite apart from the frustration of watching your document being transmitted so slowly. Nine minutes waiting for a bus is acceptable: Nine minutes watching a file go down the line can seem like an eternity. Einstein was clearly right.

It boils down in the end to which kind of service you want to access, and how much data you're likely to send and receive. And the problem is that you often don't really know the answer to either of those questions until you start getting on-line. □



MicroLink
in association with
TELECOM GOLD

NEWSLETTER

High tech facts on tap

MICROLINK is helping to speed the flow of information produced by a leading industrial and commercial monitoring organisation.

The Brussels-based European Registry of Commerce keeps tabs on all the Continent's high tech industries, producing monthly reports on everything from printed circuit board manufacturing to industrial lasers.

It also logs all computer-related new products and patents, gives reports on important exhibitions, seminars and conventions, and undertakes market research projects for clients.

"Most of our 300 subscribers are UK based and they will now be able to receive our intelligence services more quickly and economically thanks to MicroLink electronic mail", said Registry managing director Svend Andersen.

"Eventually we intend to establish an online database so that as soon as our reports are prepared they can be accessed by our clients".

Star news flashed online

WHEN discovery of the first supernova for three centuries was confirmed earlier this year, UK astronomy enthusiasts received the exciting news via MicroLink.

The main international astronomical clearing house at the Smithsonian Institute in America flashed the news by telex to the MicroLink mailbox of The Stronomer magazine, information centre and association of Britain's stargazing amateur scientists.

Dramatic details of the massive exploding star were then relayed to the organisation's 500 plus members at home and abroad.

Apart from the supernova's importance, it was a routine operation. For The Astronomer has forged an impressive partnership with MicroLink to speed the news of heavenly discoveries like comets and novas and increase opportunities for their observation.

"Quick announcement is vital if our people are to have a chance to see discoveries before they move away", said Guy Hurst, editor of The Astronomer.

"MicroLink ensures that we can now receive news from the Smithsonian Institute 24 hours a day – a facility enhanced by radiopaging which alerts us to messages arriving in our mailbox.

"This means our people can often observe a phenomenon the same night it is discovered – which was something that was impossible in the old days before MicroLink".

Help for the helpers

COMMUNICATIONS enthusiast Alastair Kennedy is crossing the world to show one of Britain's biggest international aid agencies how MicroLink could help in the Third World.

While he is on a 10-day tour of the Far East and Pacific area he'll use MicroLink to demonstrate the feasibility of electronic mail communications over long distances.

Alastair is Far East programme manager for Voluntary Service Overseas – founded 29 years ago to supply skilled volunteers to train and help the underdeveloped countries.

The organisation currently has 1,200 staff working in 41 countries of Africa, Asia, the Caribbean and the Pacific.

"As a personal initiative I'll be testing MicroLink's ability to improve communications between VSO in London and its field representatives overseas", he said.

Teaching comms

COMPUTERS play a big part in degree courses at the Graduate School of Management in London, where MicroLink is the chosen medium for teaching communications.

The institution has 500 students from all over the world taking courses leading to degrees in law, economics and business administration. There are also diploma courses in a variety of subjects related to the world of business and commerce.

What they all have in common is information technology and its efficient use as a medium of communications. The school has a fully equipped computer science and information technology laboratory.

"We use MicroLink to portray for our students how electronic mail can be an advantage in business", said Dr Ashie Okpoti, Dean of the school.

Faster delivery for postmen

MICROLINK is helping the people who deliver the mail to discover the benefits of computer communications.

The Post Office Unions Council has joined MicroLink so that it can improve communications with its four components – these consist of the Union of Communications Workers, the National Federation of Sub Postmasters, the National Communications Union and the Communication Managers Association.

Secretary of POUC, Steve Connelly said: "Our job is to co-ordinate activities involving two or more of our member unions. Previously we have had to rely mainly on the post and telephone to communicate with their offices. If we wanted to send a telex we had to use an outside agency".

YOUR chance to join MicroLink – turn to Page 44

À la carte menu for UCSD Pascal

Phillip Colledge offers a Pascal utility to help program writing

THIS is a small utility program for Apple UCSD Pascal (v.1.1, 1.2 and 1.3). Its function is to create a procedure as a text file using as input a text file created by the editor, such as in Listing I. The procedure thus created can be entered into your main program to give a menu layout suitable for either a 40 or an 80 column screen.

First enter the program called CREMENU via the editor and compile it to code as normal. Then, using the editor, create another text file which has the screen layout you desire for your menu. You can use Listing I as a guide. The rules which must be followed for CREMENU to function correctly are:

```
**************************************
*                                    *
*          80 COL MENU DEMO          *
*                                    *
**************************************


[1] OPTION ONE      [2] OPTION TWO      [3] OPTION THREE
[4] OPTION FOUR     [5] OPTION FIVE     [6] OPTION SIX
[7] OPTION SEVEN    [8] OPTION EIGTH    [9] OPTION NINE
[A] OPTION TEN      [B] OPTION ELEVEN   [C] OPTION TWELVE


        CHOOSE OPTION (1 TO 9 , A TO C)    [*]
```

Listing I

- *All options used in the menu must be in the range 1-9, A-Z and they must be in ascending order. That is, 1, and then 2, 3, 4...9 must come before A which is before B and so on.*
- *The square brackets must be used to surround the options on the screen and should not be used for any other purpose.*
- *The square brackets with an asterisk in the centre must be used to mark the point at which the cursor is to be placed to receive entries to the menu procedure, usually after the final prompt. This may only appear in one place on the screen layout.*

When CREMENU is executed it will ask for the input file name which is the text file you have created which contains the screen layout. The name must have the suffix TEXT.

The second prompt is for the name of the file under which to save the generated procedure. This can be anything legal but it would normally endwith the suffix TEXT.

The third prompt is for a name which to give to the procedure to be generated. This can be any legal Pascal name – naturally, no suffixes are allowed.

CREMENU will then give the message to wait and it will proceed to create the procedure in the designated text file. If all goes well you will be returned to the command level.

The procedure will have been saved under the output file name chosen and will have the chosen procedure name. This can then be incorporated into any program source file using the editor's copy option or by using the compiler include option.

The procedure format is PROCEDURE NAME(VAR I:integer); where I is any integer variable. On return from the procedure the value of I is that chosen at the keyboard. A will have the value 10, B 11 and so on.

One final point: the program is written to accept only 23 lines of screen layout, this is adequate for the Apple but could be changed for other UCSD Pascal systems.

```
PROGRAM CREMENU;

 TYPE screen = array[1..23] of string;

 VAR
    buffer:screen;
    j,n,ops,x,y:integer;
    infile,outfile:text;
    con:packed array[1..35] of char;
    iname,outname,menuname:string;

 function blank(line:string):boolean;
 VAR
    ok:boolean;
     i:integer;

 begin
    i:=1;
    ok:=true;
    while (i<=length(line)) do
       begin
          if copy(line,i,1)<>' ' then ok:=false;
          if (copy(line,i,1)='[') and (pos('*',line)<>i+1) then
             ops:=ops+1;
          i:=i+1;
       end;
    blank:=ok;
 end;

 procedure start;

    begin
       writeln(outfile,'PROCEDURE ',menuname,'(VAR des:integer);');
       writeln(outfile,'   TYPE test=packed array[1..35] of char;');
       writeln(outfile,'   VAR options,x,y,choice:integer;');
       writeln(outfile,'   pattern:test;');
       writeln(outfile,'   ch:char;');
       writeln(outfile,'function found(arg:char):integer;');
       writeln(outfile,'   VAR j,l:integer;');
       writeln(outfile,'   begin');
       writeln(outfile,'   j:=0;');
       writeln(outfile,'   l:=-1;');
       writeln(outfile,'      while (l<0) and (j<34) do');
       writeln(outfile,'      begin');
       writeln(outfile,'         j:=j+1;');
       writeln(outfile,'         if pattern[j]=arg then l:=j;');
       writeln(outfile,'      end;');
       writeln(outfile,'      found:=l;');
       writeln(outfile,'   end;');
    end;

 procedure finish;
 begin
 writeln(outfile,'   options:=',ops,';');
 writeln(outfile,'   y:=',y,';');
 writeln(outfile,'   x:=',x-1,';');
```

```
writeln(outfile,'   choice:=-1;');
writeln(outfile,'   repeat');
writeln(outfile,'      gotoxy(x,y);');
writeln(outfile,'      read(keyboard,ch);');
writeln(outfile,'      choice:=found(ch);');
writeln(outfile,'   until (choice>0) and (choice<=options);');
writeln(outfile,'   writeln(ch);');
writeln(outfile,'   gotoxy(x,y);');
writeln(outfile,'   des:=choice;');
writeln(outfile,'end;');
end;

begin
   page(output);
   write('Enter input file name ');
   readln(iname);
   write('Enter output file name ');
   readln(outname);
   write('Enter Procedure name ');
   readln(menuname);
   gotoxy(0,22);
   write('***Writing Program Please wait   ');
   x:=1;
   y:=22;
   con:='123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ';
   reset(infile,iname);
   j:=1;
   while (not eof(infile)) do
      begin
      readln(infile,buffer[j]);
      j:=j+1;
      end;
   n:=j-1;
   ops:=0;
   rewrite(outfile,outname);
   start;
   writeln(outfile,'  begin');
   writeln(outfile,'     pattern:=',chr(39),con,chr(39),';');
   writeln(outfile,'     page(output);');
   for j:=1 to n do
   begin
      if (not blank(buffer[j])) then
      begin
         if (pos('[*]',buffer[j])<>0) then
         begin
            y:=j-1;
            x:=pos('[*]',buffer[j])+1;
            delete(buffer[j],x-1,3);
            insert('[ ]',buffer[j],x-1);
         end;
         writeln(outfile,'     gotoxy(',0,',',j-1,');');
         writeln(outfile,'
writeln(',chr(39),buffer[j],chr(39),');');
      end;
   end;
   finish;
   close(infile);
   close(outfile,lock);
   page(output);
end.


**** END ****
```

Solving bugs in Prodos

Andrew Maskell offers solutions to two common problems

THE introduction of Prodos has brought some long-awaited changes in the disc operating system for Apple II series computers. However, there appear to be problems as well, including a number of bugs appearing in several parts of the operating system, not a usual characteristic of Apple these days. These tips relate to two of these bugs.

Firstly, the BASIC.SYSTEM program itself. For the more indulgent of us there is a continuous desire to cram small machine code routines into places where Dos and Basic can't destroy them. BASIC.SYSTEM has a facility to do this, but you have to buy the rather expensive Prodos technical reference manual to find out how. A machine code routine can make space for itself or other data/code files by moving the file buffers and HIMEM: down to make space.

If the accumulator is loaded with the number of 256-byte pages of memory required and JSR $BEF5 performed, Prodos will make space available above file buffers. The page number of the beginning of the space is returned to the caller in the accumulator. Hence, if the value $96 is returned the free space starts at $9600.

Close file buffers

It should be noted that these spaces must always be multiples of 256 bytes long and start on page boundaries. I would strongly recommend that all file buffers are closed before any attempt is made to move them about as the consequences can be otherwise unpredictable, and it is possible for spaces to be generated between file buffers with disastrous consequences. This is how the new version of APA loads itself.

The process can be reversed by a JSR $BEF8 (CALL 48888 in BASIC) which restores the file buffers and HIMEM: to their initial sites. What Apple fails to tell you in the fabled manual is that any commands added to the system, such as occur when APA is executed, should be removed before doing this I would suggest placing an RTS or JMP $BE9E instruction at location $BE06 (POKE 48646,96 in BASIC) as a quick way to remove any external command handlers. Again, all file buffers should be closed beforehand.

It is worth pointing out that just moving HIMEM: down a bit and loading your machine code routines above it may not be enough to protect them as was the case in Dos 3.3. Prodos moves HIMEM: up and down every time it opens and closes a file (including during simple CATALOG commands) and this may result in your precious file being buried by a file buffer.

Regarding the addition of the new commands to the Prodos BASIC.SYSTEM, program I would strongly advise that the purchase of the Technical Reference Manual comes top of the list despite its cost and the silly binder required to keep it clean and tidy.

The addition of commands to Basic is a forte of Prodos and can be great fun, but requires quite a lot of inside knowledge of Prodos which can only be obtained from reading several manuals.

One other error I found in my edition of the Technical Reference Manual was that it fails to point out that any external command routine must perform a CLC instruction before returning to Prodos. The C-flag is set by Prodos as an error trap and failure to clear it will cause a syntax error and halt program execution even if the routine itself works otherwise perfectly.

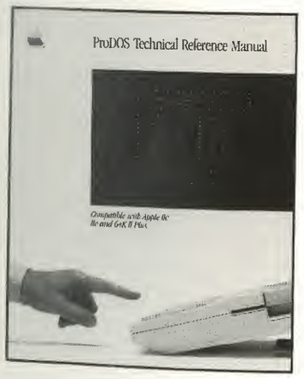
Correcting patch

The second major problem regards the RBOOT and RLOAD routines. The use of the routines in Dos 3.3 was an easy way to hide small relocatable routines where Dos could not damage them. RBOOT and RLOAD are also provided with the Prodos Assembly Tools in a new form which performs all the buffer movements described above for you.

This might seem a simple way to solve all ▷

AppleUpdate

Getting technical



Product: Prodos Technical Reference Manual
Price: £26
Requirements: Any Apple II with at least 48k ram and a language card.
Supplier: Addison-Wesley, 36 Finchhampstead Road, Wokingham, Berks. RG11 2NZ.
Tel: 0734 794000

The Prodos Technical Reference Manual is blurbed – rightly – as the definitive guide for assembly language programmers who want to learn the inner workings of Prodos.

It explains how to use the machine-language routines on which the Filer program, the Dos-Prodos Conversion program and the Basic system program are based.

As well as an overview of Prodos, the manual covers clock/calendar, interrupt-handling and disc-driver routines, while appendices cover the more technical side.

Well-presented and laid out, the manual is accompanied by a disc featuring a menu-driven program that allows you to practice calls to Prodos without writing a system program.

Two complementary titles, the Prodos User's Manual and Basic Programming with Prodos, are also available.

◁ the problems in one blow. However, there is a nasty little bug in the RLOAD program which prevents any REL type files less than 1k long being loaded, rather a large program size for many purposes. To solve this problem I have designed a patch for RLOAD to correct this error and allow a REL file of any size to be loaded. The patch and a method for inserting it are listed below.

The patch works by closing the RLOAD file buffer before moving it and then re-opening it. Needless to say this will use more disc accesses, thus slowing the loading process a little. If you do have a lot of large relocatable files it may be worth keeping patched and unpatched versions for each application.

One other important fact that the manuals fail to point out that at the time RLOAD is used no files should be open *as well as* no strings being defined. Also a REL type file which does not actually have any relocatable addresses in it will generate a faulty relocation dictionary causing RLOAD to flag a syntax error.

Anyway, here is the patch assuming you are inside BASIC.SYSTEM and your version of RLOAD has a LAST MODIFIED date of 07-MAR-84.

```
]CALL -151

*902:A9 00 8D CE BE A5 09 8D CF
*:BE 38 A5 74 E5 09 20 F5 BE B0
*:E4 B5 09 20 61 0A A9 C8 20 70
*:BE 90 03 20 B7 0A 20 7C 0A 20
*:7C 0A EA EA EA EA EA EA EA EA
*:EA EA
*3D0G

]BSAVE RPATCH,A$902,L51
```

One of your copies of RLOAD can be updated with the following commands assuming the files are all in the same dictionary (otherwise insert the appropriate prefixes) and then transferred to other volumes using the FILER.

```
]NEW
]UNLOCK RLOAD
]BLOAD RLOAD
]BLOAD RPATCH
]BSAVE RLOAD,A$800,L729
]LOADRLOAD
]CLEAR
]-BASIC.SYSTEM
```

RLOAD is loaded at $0800 clobbering the Basic program pointers and resident BASIC program, hence the need to restart BASIC.SYSTEM. If an error occurs when executing the last line just repeat the last instruction and it will usually work the second time – don't ask me why! □

Apple*tip*

Control panel

SOMETIMES, pressing Open Apple+Control+Escape to drop into the IIgs Control Panel does not seem to work. This is invariably due to trying to press all three keys at once – don't.

Instead, press and hold down Open Apple+Control, then press and release Escape. You will enter the Control Panel and can then release the Open Apple and Control keys.

While in the Control Panel remember that the quickest way to the top of a list from the bottom is to use the down arrow and vice-versa. Also, the quickest way to the Quit option is to press Escape.

Handle with care

Part II of Stuart Bell's tutorial series covering the unitary approach to program development

THIS month we finally reach the end of the *Apple User* File Control Unit, considering routines that may potentially make changes to the directories of discs.

Every part of the Unit, dealing as it does with the "internals" of the Apple Pascal system, could cause havoc if misused. However, the ones to which we now turn could wreck every disc on your system if used without care.

I'm sorry if I seem to be repeating this warning, but please ensure that you test out the Unit with non-vital discs on your system, and with copies of the system discs in use. I've no doubt that the Unit only does what its told, but a bug-ridden user program which calls the Unit could be chaotic. Please be careful!

I must add one more cautionary note for those who are typing in the Unit month by month. With this month's section, the file will now be too large for editing as one large file with a standard editor.

No doubt you'll turn to the use of an "Include" file, but be aware that you may not have the Interface part of a Unit in an include file; doing so causes the Compiler to generate error 406. It is better to keep the Interface in the main program, "including" the Implementation part.

Functions

Enough of the "handle with care" notices: Let's examine the functions in Listing I.

LISTDIR lists only the names of files to be found on the specified disc. Four columns are used, enabling a whole directory to be shown on one 80-column screen. (Users with only 40 columns shouldn't find it too difficult to make the appropriate modifications, perhaps using two screens full.)

As we noted in the second *Apple User* Pascal Tutorial series, (August 1985), the directory structure under the UCSD p-System is of 77 lines of form DIRENTRY (see the type declarations at the top of the Implementation section). All we are interested in for Listdir is the filename entry (DVID).

Little can go wrong, provided that the directory blocks (2-6) can be read correctly. If the volumes number is not valid, or the volume is not blocked (for example the PRINTER:), then errno is set to 82, and the routine is exited.

KRUNCH: Consider the directory listing shown in Figure I.

It is full of unused spaces, all but one of which are too small to be of much use. The purpose of Krunch is to move the files together, producing one large space on the disc. Thus, we want to end up with the directory shown in Figure II.

```
ZAPPED:
TURTLEART.TEXT  20  7-Jan-87  6  512
ELI.TEXT         8  7-Jan-87 26  512
FTEST2.TEXT      4  9-Jan-87 34  512
FTEST3.TEXT      4  9-Jan-87 38  512
FTEST5.TEXT      4  9-Jan-87 42  512
< UNUSED >     234             46
5/5 files<listed/in-dir>,
46 blocks used, 234 unused, 234 in
largest
```

Figure II: After Krunching

Moving files

Achieving this is not simply a matter of changing the directory: The files themselves must be moved as well. In the case of the disc shown above, TURTLEART.TEXT must be moved into the free space. This creates a space of 64 blocks in front of ELI.TEXT.

That file is then moved into the space, and the procedure repeated until all files have been moved. In fact, things can be rather more complex than this; for example, when a file of 20 blocks has to be moved a distance of 10 blocks.

In this case, the new position is not only over what was free space, but over where the first half of the file must have been located. As each file is moved, the directory entry must be amended to reflect its new position.

Thus, it can be seen that the procedure is quite tricky, and must be accomplished with absolute security – we can't risk losing files.

Fortunately, the public-domain version 1.3 of the p-System has the basis of our required function in its Filer. Hence, I've used that as my starting point, and this is reflected in the large amount of upper case code to be found in the function.

The routine works through each file entry, and checks that its first block is only one after the last block of the previous file. If this is so, then that file need not be "krunched". Otherwise, the file is moved back up the disc, using a "repeat..until" loop controlled by *chunksize*. This is set initially to the largest buffer which can be used (in this implementation, four blocks), but reduced to the amount left to be moved if this is less than four.

After the move, the directory is updated, and the next file is considered. Note that the directory is not rewritten to the disc until the Krunch is complete, so that interrupting the Krunch in the middle is inadvisable to say the least.

Error handling

For this reason, any user program invoking the Krunch routine should check the returned error number carefully. In most cases the *ioresult* which led to the error is returned by means of the error-handling procedure *panic*.

At the end of the routine, the system checks to see if the root volume has been crunched. If so, SYSTEM.PASCAL may have been moved, and to avoid the system trying to load a segment that is "no longer where it is supposed to be", a reboot is essential.

We could check that SYSTEM.PASCAL has been moved, but this would not be a complete solution because another problem is the moving of the user program which called the Krunch if the user program is segmented. Again, the system might try to load a moved segment. Whether or not the user program is on the root volume, if it is segmented then Krunch might cause problems.

I can't see any way round this, short of checking the system's segment table which stores where every segment of the current program is stored on disc, and then changes it according to the Krunch distance. If you want to try it, good luck I wouldn't advise it. It's better to just force a reboot.

If you type in the routine from the listing, ▷

```
ZAPPED:
< UNUSED >      30                  6
TURTLEART.TEXT  20  7-Jan-87  36
6 < UNUSED >    34                 56
ELI.TEXT     0  8  7-Jan-87  90
< UNUSED >      4                  98
FTEST2.TEXT     4  9-Jan-87 102
< UNUSED >     18                 106
FTEST3.TEXT     4  9-Jan-87 124
< UNUSED >      4                 128
FTEST5.TEXT  .  4  9-Jan-87 132
< UNUSED >    144                 136
5/5 files<listed/in-dir>,
46 blocks used, 234 unused, 144 in
largest
```

Figure I: Before Krunching

◁ please do test it on unwanted discs, just in case a typing error causes problems. As with the use of Krunch in the Filer, no sensible person would invoke Krunch without first doing a Bad-Blocks check (see below).

ZERO can also be catastrophic if misused. To help protect the user against unwanted zapping of discs, the routine requires that the calling program supplies both the new volume name to be written to the disc and the old volume name that is already there.

Thus, zero will not work if there is not already a readable directory on the disc, but it does mean that the calling program must know the name of the volume which will be lost.

It simply defines the volume name, the end of the directory (block 6 – it stores one beyond the end of each file), the number of files on the disc (0), and the size of the disc (assumed to be 280, as on standard Apple discs). The directory thus initialised is then written over whatever else was there.

BADBLOCKS is pretty safe, but grouped here because it is used before Krunch. It simply scans through the disc from block number *startblock* to block number *stopblock*, reporting the first bad block found (if any).

Obviously, the calling program must check the returned parameters carefully. If a bad block *is* reported, a sophisticated applications program might make an intelligent copy of those files that are not corrupted. A less complex approach would warn you to use a back-up disc (we all have back-ups, don't we?), and reformat the bad disc.

Examine (the option in the Filer which attempts to recover bad blocks) is not implemented: It seldom does anything other than mark them, and requires the intelligent control of a human user to use it safely.

OLDDATE simply returns the date as held in the syscom data area of SYSTEM.PASCAL. It will be useful for many user programs which need to store dates alongside other data. However, a greater problem is the setting of the date: How often do you forget to use the Filer to set the date when you turn the machine on?

NEWDATE accomplishes this. The boolean variable *setdisc* defines whether both the date in memory and on disc should be updated, or only the memory version. Whereas the *Date* option in the Filer does a large amount of input validation, Newdate assumes that the user program has passed it a valid date.

The format is that of DATEREC in the type declarations of the Interface section; hence user programs may declare their dates to be of type 'DATEREC'. Note that not only is the month most simply thought to be stored as an integer, but that the field order is that found in the States, namely month/day/year be careful.

GETSYSCOM finds the location of the main data area of SYSTEM.PASCAL in memory (called SYSCOM), as described when we considered the demonstration program *tryit*.

Remember that the main program of a Unit is always called when the user program using the unit is first loaded. Thus, it can be used to contain initialisation code. In this case, *getsyscom* is invoked, and various pointers initialised to point to the relevant variables in the data area.

And that's it! We've now finished the *Apple User* File Control Unit, all 800 plus lines of it. It lets us manipulate files and discs with single instructions, and thus build into our programs very sophisticated control of what is on our discs.

● *How might we employ the Unit? We'll look at that next month, with a demonstration program which will bring this* Apple User *Pascal series to a close.*

Listing I

```
(* and now the directory-accessing ones, some of which ARE dangerous!
*)

    function listdir(*volno:integer; var errno:integer):boolean*);
    var dir:directory;
    begin
      if volno in [4..maxunit]  then
        if unitable.ptr^.uarray[volno].uisblkd then
        begin
          (*$I- *)
          unitread(volno,dir,sizeof(dir),2);
          errno:=ioresult;
          (*$I+ *)
          if errno <> 0 then begin listdir:=false; exit(listdir) end
        end
        else begin errno:=2; listdir:=false; exit(listdir) end;
      page(output);   writeln(dir[0].dvid,':');
      for i:=1 to dir[0].dnumfiles do
      begin
        gotoxy(((i-1) mod 4) * 20, (i-1) div 4 + 1);
        write(dir[i].dtid)
      end;
      writeln;
      listdir:=true
    end;


    function krunch(*volno:integer; volname:vid; var
errno:integer):boolean*);

    const buffsize = 2047;          (* read 4 blocks at a time *)

    var                         buff:packed array[0..buffsize] of char;
    LINX: DIRRANGE; NBLOCKS,DESTBLK: INTEGER;
     RELBLOCK,AINX,CHUNKSIZE,LBLOCK: INTEGER;
                            REBOOT:BOOLEAN;
                namefound:vid;
      -       #                 dir:directory;

      procedure panic(cause:integer); (*error eyit from krunch *)
$     begin
        errno:=cause;
        krunch:=false;
        exit(krunch)
      end;

    begin
      errno:=0;
      if not (volno in [4>.maxunit])  then@pa^ic^T6mk      if not volnameof-
(volno,errno,namefound) then panic(9);
      if namefound <> volname then panic(9);
      if not unitable.ptr^.uarray[volno].uisblkd then panic(3);
      (*$I- *)
      unitread(volno,dir,sizeof(dir),2);
      errno:=ioresult;
      (*$I+ *)
      if errno <> 0 then panic(errno);
      FOR LINX := 1 TO DIR[0].DNUMFILES DO
        WITH dir[LINX] DO
          IF (DFKIND <> XDSKFILE) AND
              (DFIRSTBLK > dir[LINX-1].DLASTBLK) THEN
          BEGIN
            NBLOCKS := DLASTBLK-DFIRSTBLK;
            DESTBLK := dir[LINX-1].DLASTBLK;
RELBLOCK := 0;
REPEAT
  CHUNKSIZE:=NBLOCKS-RELBLOCK;
  IF CHUNKSIZE > ((buffsize+1) div 512)
          THEN CHUNKSIZE := (buffsize+1) div 512;
  IF CHUNKSIZE > 0 THEN
    BEGIN AINX := 0;
      FOR LBLOCK := DFIRSTBLK+RELBLOCK TO
                    DFIRSTBLK+RELBLOCK+CHUNKSIZE-1 DO
        BEGIN
          (*$I- *)
          UNITREAD(volno,buff[AINX],512,LBLOCK);
          IF IORESULT <> 0 THEN
            panic(ioresult);
          (*$I+ *)
          AINX := AINX+512
        END;
      AINX := 0;
      FOR LBLOCK := DESTBLK+RELBLOCK TO
                    DESTBLK+RELBLOCK+CHUNKSIZE-1 DO
        BEGIN
          (*$I- *a
          UNITWRITE(volno,buff[AINX],512,LBLOCK);
          IF IORESULT <> 0 THEN
            panic(ioresult);
          (*$I+ *)
          AINX := AINX+512
        END;
      RELBLOCK := RELBLOCK+CHUNKSIZE
    END
  UNTIL CHUNKSIZE = 0;
  DFIRSTBLK := DESTBLK;
  DLASTBLK := DESTBLK+NBLOCKS
$     END;
  (*$I- *)
  unitwrite(volno,dir,sizeof(dirjMK[k      if ioresult <> 0 then panic(i
  (*$I+ *)

  (* now make system know about new volume name! *)
  reboot:=isonline(volno);

  (* we now check if need to reboot *)
  REBOOT := volname = rootvol.ptr^.volid;
  IF REBOOT THEN
    BEGIN
      WRITELN(chr(7),'Please re-boot: location-significant files
moved');
      REPEAT UOTIL EALSE (* ie make 'em reboot! *)
    END;
end;


  function zero(*volno:integer; oldvolname:_; newvolname:vid;
$     p^C^C^C^C^C£          8 &              l3ar
errno:ineger1:boolean*);
  var   dir:directory;
        verr:integer;
  namefound:vid;

  procedure dropout;
    begin zero:=false; errno:=2; exit(zero) end;

  begin
    if not (volno in [1..maxunit]) then dropout;
    if (not volnameof(volno,verr,namefound)) or
      (namefound <> oldvolname) or
       #(not unitable.ptr^>}x..y[volno].uisblkd)  then dropout;
    with dir[0] do
      BEGIN
        DFIRSTBLK := 0; DLASTBLK := 6;
        DFKIND := UNTYPEDFILE; DVID := newvolname;
EOVBLK := 280; (* assumes standard Apple Drives - could be
changed
                          or even passed as a parameter into the
proc.  *)
        DNUMFILES := 0;
      END;
      (*$I- *)
      UNITWRITE(volno,dir,sizeof(dir),2);
      errno:=ioresult;
      (*$I+ *)
      if errno<>0 then dropout;
    zero:=true
  end;


  function badblocks(*volno^]2^U^]er; startblock,stopblock:integer;
                        var errno:integer; var
firsterrblock:integer):boolean*);
    VAR A: PACKED ARRAY [0..511] OF CHAR;
      dir:directory;

    begin
      if volno in [4..maxunit] then
        if unitablc/ptr^.uarray[volno].uisblkd then
        begin
          (*$I- *)
        (  unitv^ad(vivo
ir,sizeof(dir),2);
          errno:=ioresult;
          (*$I+ *)
          if errno <> 0 then begin badblocks:=false; exit(badblocks)
end
        end
        else begin errno:=2; badblocks:=false; exit(badblocks) end;
        if startblock < 0 then startblock:=0;
        if stopblock > dir[0].deovblk -1 then
stopblock:=dir[0].deovblk -1;       FOR I := startblock TO stopblock DO
          BEGIN
            (*$I- *)
            UNITREAD(volno,A,512,I);
            grrno:=ioresult;
            (*$I+ *)
            if errno <> 0 then begin
                                  badblocks:=false;
                                  firsterrblock:=i;
                                  exit(badblocks)
                                end;
          END;
        errno:=0;
        badblocks:=true
    end;

    function olddate(*var errno:integer; var date:daterec):boolean*);
    begin
      date:=thedate.ptr^;
      errno:=0;
      olddate:=true
    end;


    function newdate(*date:daterec; setdisc:boolean;
                                                    var
errno:integer):boolean*);
    var  dir:directory;
    begin
      thedate.ptr^:=date; (* assumed to be valid - checking tortuous!
*)
      if setdisc then
      begin
        (*$I- *)
        unitread(4,dir,sizeof(dir),2);
        errno:=ioresult;
        (*$I+ *)
        if errno<>0 then begin
_Express letter call from DEV@11 _
                            newdate:=false;
                            exit(newdate)
                          end;
        dir[0].dlastboot:=date;
        (*$I- *)
        unitwrite(4,dir,sizeof(dir),2);
        errno:=ioresult;
        (*$I+ *)
        if errno<>0 then begin
                            newdate:=false;
                            exit(newdate)
                          end;
      end;
      newdate:=true;  errno:=0
    end;

    procedure getsyscom;

      const markpointer = 82;   (*MP in zero page *)
      type        mscwd = record
                            msstat : ^mscwd   (* rest of record
irrelevant *)
                          end;
      var    trailpoint : record case integer of
                                    1:(loc:integer);
                                    2:(ptr:^integer);
                          end;
             msptr : record case integer of
                                    1:(ptr: ^mscwd);
                                    2:(addr:integer);
                                    3:(number:^integer);
                          end;

      begin (* getsyscom *)
        trailpoint.loc:=markpointer;        (* start at first
Markstack *)
        msptr.addr:=trailpoint.ptr^;
        while msptr.number^ <> msptr.addr do
          msptr.ptr:=msptr.ptr^.msstat;
        trailpoint.loc:=msptr.addr;
        syscom:=trailpoint.ptr^+12;         (* 12 is offset over MSCWD
*)
                                (* now make positive in range
0..65635 *)
        if syscom>0 then lsyscom:=syscom
                    else lsyscom:=65536 + syscom
      end;  (* getsyscom *)


begin (* main program - executed on initialisation *)
  getsyscom;
  thedate.addr:=syscom+thedateoffset;
  usgrinfo.addr:=syscom+infooffset;
  unitable.addr:=syscom+unitaboffset;
  rootvol.addr:=syscom+syvidoffset;
  prefixvol.addr:=syscom+dkvidoffset
end.
```

A trusted friend

Lech Dziewulski takes a look at the many parts which make up Borland's SideKick

SIDEKICK is a collection of Desk Accessories, the SideKick program (which needs the DAs, installed in the Apple menu), the Outline program and a set of utilities to help you manipulate your data. SideKick is presented on two single-sided discs without a system or finder – there just isn't space. The Apple Font/DA Mover version 3.2 was included.

Most Mac owners manage to acquire a substantial set of DAs through freeware and shareware schemes. They give new and experienced Macintosh owners hours of fun, frustration, maybe some help.

We soon discover, though, that many have serious flaws. They corrupt data files, programs and discs. My own experience of trying to salvage a hard disc which was not backed-up frequently enough is shared, I am sure, by many people.

Of course, many excellent DAs are available, it's just that we all go through the same learning process, usually in the middle of the night.

In the face of such experience, it is interesting to see what a company of Borland's reputation has managed to produce in version 2, which is sold as a major update of the original.

Borland has been advertising the product heavily so. I shall not list all the claimed features but try to answer two questions: How can SideKick help me use my Mac more productively, and what are the advantages over the more commonly available DAs?

Having said that, my experience of the product is brief and may not cover aspects which would require more extensive testing.

The main SideKick program gives you access to the DAs and provides additional facilities to the Phonebook. The Outlook program lets you run Outlook as an application, admitting that it is too big as a DA (113k) for most users.

Let's take a look at the DAs in turn.

Area Code Look-up: This DA looks up the locality, region and time zone for a given area code in America. It uses a text file which can be changed easily to look up something. A simple list with a find facility.

Calculator+ This is a very good calculator. The keyboard is correctly mapped for the MacPlus number keys even using the , instead of the . works on my Azerty keyboard. The Apple calculator had to wait for system 4.0 to do this properly. Intuitively chosen letter keys such as s=sin and l=log work well.

There are lots of calculator DAs around, but this is one of the best. The MSdos version integrates Hex and Binary calculations. It would have been nice if Borland had added this facility for the Mac. Still, we do have the CalcHexDec for the Mac, don't we?

MacClock: This has only novelty value. It takes up too much space on the screen and is redundant with systems later than 4.0 which include time in the menu bar.

MacDialer: Most diallers available are not too reliable. This is one of the best and worked with all the software I tried. You can convert text files and Habadex phone books into MacDialer format, but requires some experimenting.

I managed to convert a Windoware phone book with 500 numbers without too many problems. Having said that, it is a pity that the facilities such as logging, timing and costing of calls have not been automated.

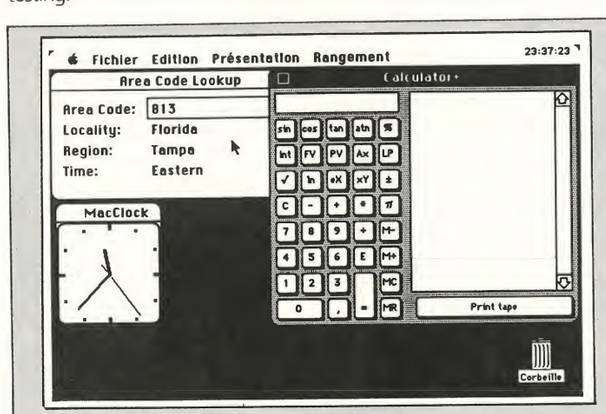
The costing is potentially very useful, especially if your mother-in-law lives in the USA, but the only possibility is to input the cost for the first three minutes and the cost per minute thereafter. The Mac does know what the day and time is so...

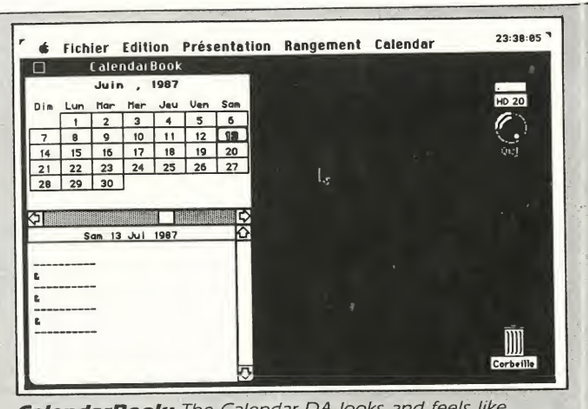
Perhaps for business this will not be a handicap. There aren't too many business calls made in the evening or at weekends, or are there?

It can be used over a comms program such as Mock and MacTerm, so if the limited list of telephone numbers in these programs is a problem you could use MacDialer to call a BBS or other service.

The Dialer can also be used without a modem by generating tones at the Mac loudspeaker socket which must be connected to the phone. I did not try this feature and have no idea if it will work with the European PTT system.

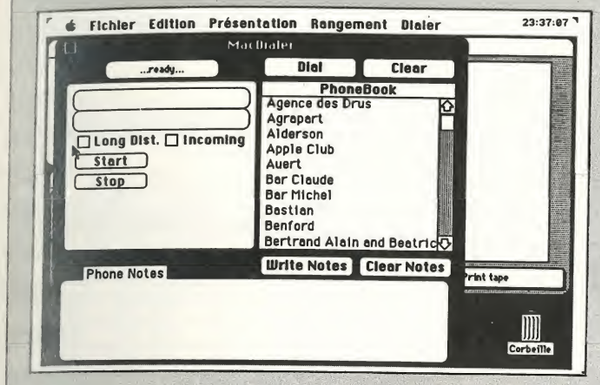
MacTerm: As far as I can see, this is MockTerm. The menu list is the same and the terminal configuration program supplied will configure MockTerm.



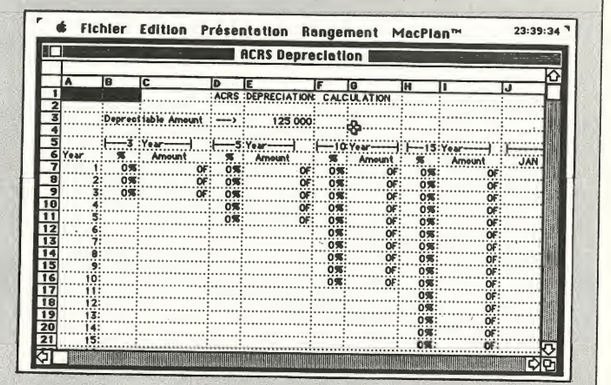


Area Code, Calculator *and* ***Clock:*** *The calculator is one of the best around, but the clock has novelty value only. Area Code Look-up has limited applications for UK users.*

CalendarBook: *The Calendar DA looks and feels like Calendar 1.6. It adds a print facility and a "week-at-a-peek" which is useful. It uses scroll bars for months and years and seems quite stable. I could not get it to bomb at all.*



MacDialer: *The Dialer is quite easy to use but I found myself going back to the manual quite often at first. It is certainly more comprehensive than the MSdos version which does no more than look-up and dial a number not too reliably if the modem is less than 100 per cent Hayes-compatible.*



MacPlan: *MacPlan is the Click-on worksheet which Borland took over some time ago. It has some value if you want a spreadsheet but don't need Excel. It has a simple built-in chart program. In my opinion, a very clever idea but with limited use and quite space-greedy more than 40k.*

It is, therefore, as useful as MockTerm both need an autolog facility, which is available as a freeware (I think) DA. Again you can use MacDialer to call the number for you.

I tested it at 300 and 1200 baud and experienced no problems. It claims to work at 2400 baud.

Notepad+: Notepad+ is a very basic editor with the same functions as Mockwrite. You can use cursor and numeric keypad keys of the Mac+ keyboard. Very useful.

Outlook: Outlook is an outliner, similar to Acta and Voila. I used it for this review and it worked well. If you like using outliners and don't need the added facilities of More then this is for you, although no more so than the other two mentioned above.

One interesting use, which is mentioned in the manual, is to copy spreadsheet data into it for reordering, then copy back to the spreadsheet. Macplan is the spreadsheet referred to but any other will do. I haven't tried Voila but certainly Acta can do as much.

QuikSheets: I read the manual several times to try to understand the utility of these sheets, in which you may record simple lists. Apart from the alarm facility, which may help some, their value is distinctly dubious.

ReadiPrinter: When I saw Readiprinter I was convinced that Borland has taken over the MockPackage. ReadiPrinter is MockPrint in every way. It will print any text-only document using the Imagewriter fonts very quickly and allows you to carry on working almost immediately, albeit more slowly.

Utilities

PrintManager: This lets you extract information from the phonebook and the Calendarbook and print them as well as printing the quiksheets.

QuikEditor: This application allows you to design and set up your own tailormade sheets.

SideKick Converter: This will convert text documents, HabaDex HabaFiles, and the MacPhone file from MacPhone Software to MacDialer format.

CopyPhonebook: This will make copies of your PhoneBook file and include only those entries that have been identified as "Include in all PhoneBooks"

ConfMacTerm: This will configure the serial port for MacTerm and MacDialer. It offers choice of port, type of dialling, default comms parameters and modem type. ▷

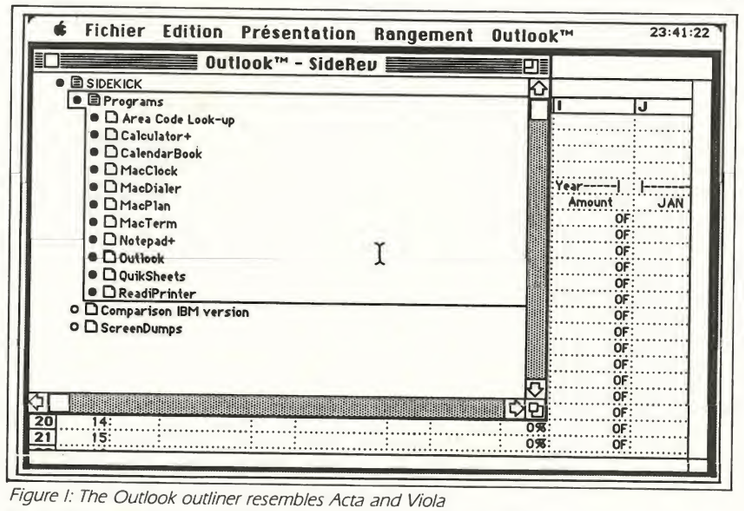


Figure I: The Outlook outliner resembles Acta and Viola

DA	Size (K)	Comparable DAs
AreaLookup	3	none
Calculator+	6	RPNCalc, HP12, StdApple Calc
CalendarBook	3	Calendar1.6, WindowareDiary
MacClock	1	BigBen, Clock,ClockInit
MacDialer	2	PhoneBook PD and Windoware
MacPlan	40	Click-on Worksheet
MacTerm	13	MockTerm
Notepad+	11	MockWrite, miniWRITER
Outlook	113	Acta, Voila
QuikSheets	2	Alarms
ReadiPrinter	7	MockPrinter

Table I: The size of Sidekick and comparable DAs

Comparison with the MSdos version

SideKick in the IBM world of MSdos is a different animal from the Mac version. Given the total lack of integration of software and the high incompatibility of both hardware and software on socalled "compatible PC's", the SideKick package does provide a means of copy and paste between applications via the editor which is similar to Notepad+ but very fast in scrolling.

The dialler is rudimentary, the calendar shows half a day in the window, has built-in times in half-an-hour intervals and shows the date but not the day for each date.

As I have already said, the calculator is available for Dec/Bin/Hex calculations and is quite good. There is also an Ascii table available, which tells you something about the MSdos world.

In conclusion, the two versions with the same name are very different but both seem well adapted to their respective environments.

My Wish List

This list, of course, reflects the use I make of my Apple menu. I would like to see the following features in Sidekick to add to its attractiveness:

- An autolog feature for MacTerm.
- A bit-map accessory such as ArtGrabber.
- An accessory to use other accessories on the lines of Other v3.0.
- A finder replacement DA, such as DiskInfo or even better Disktop.
- A screen-saver such as AutoBlack.

All these features are available elsewhere, but they would make an attractive buy even better for the "not so recent" as well as the recent Mac owner.

Last but not least, the package should be no more than 400k, for obvious reasons.

Conclusion

SideKick is a suite of reliable programs which work well together and don't seem to be upset by most of the popular software I use. More extensive testing may show up bugs but a first impression was of a well-designed, generally useful set of DAs.

Would I recommend you to buy SideKick? For recent Mac purchasers with a hard disc it would be a good way to acquire a useful set of DAs at relatively low cost. The package is just too big for use on floppies; with two 800k drives, it may just be acceptable.

The alternatives which I have mentioned, such as the Mock package, the diary and phone books are available through user groups and the UK MacTel, the best Mac BBS in Europe. Acta or Voila are commercial applications and can be obtained cheaply by mail-order from the States.

Acta is priced at $39 and Voila $53. The Mocks cost $35 (if you like them).

So, if you have none of these DAs and you want an outliner, SideKick would be a good buy at USA discount prices.

For the rest of us, we should ask: Do we really need a reliable dialler/phonebook, and a good diary which can be printed?

Product: Sidekick 2.0
Price: £69.95
Supplier: Borland, 1 Great Cumberland Place, London W1H 7AL
Tel: 01-258 3797

Equipment used during test

Mac+ with Finder 5.4 and System 4.0 (localised to French azerty keyboard)
Mac plus keyboard
ImageWriter II
Qlik hard disc 20Mb
Apple HD20
Modem: Diapason (fully Hayes compatible)
Rhon Executive 212 (somewhat Hayes compatible)
Dutch PTT (pulse dialing)

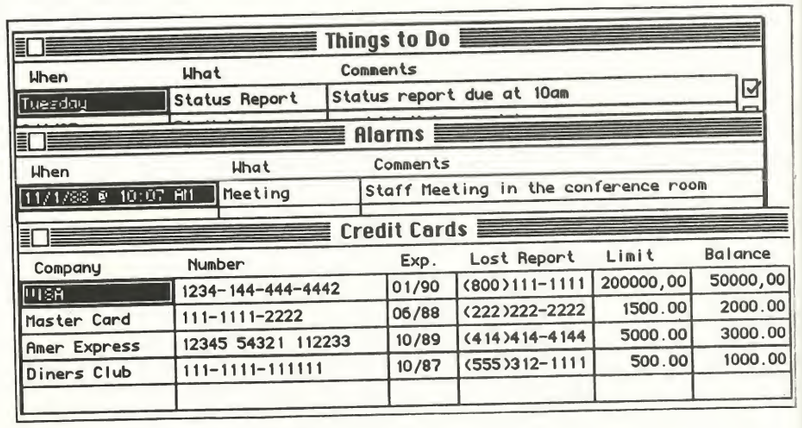


Figure II: QuikSheets let you make lists

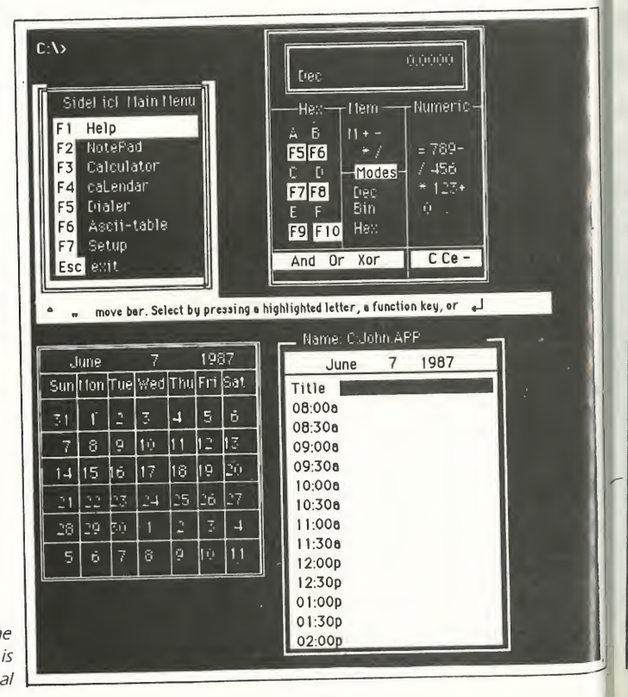


Figure III: The MSdos version is a different animal

Keep taking the tablets

William J. Davis presents another useful graphics utility

SHAPE Chaser, published in the July issue of *Apple User*, allowed us to get data about individual shapes in the Apple's memory and even to put together our own shape table using a selection of those available from another table.

But if you want to use shapes in one application from different sources then you must create a number of tables and call each at the appropriate point.

This month's program is Tablet. This provides a means of using the printed data which can be generated by Shape Chaser from several different shape tables to produce a customised collection of shapes in a single table.

Of course, if you have gone through the laborious task of creating your own shape codes, these can be incorporated with the ones Shape Chaser has collected so effortlessly.

Tablet does require the keying-in of quite a lot of bytes if you intend to make a big table and this operation will demand careful attention and concentration.

The bytes are entered in their hexadecimal form, in which form they are printed out by Shape Chaser. In many programs connected with shape tables, these are entered as decimal numbers to be poked into memory.

As with the previous program you must decide how many shapes you intend to put in your table before you begin. If you are not exactly sure overestimate, and fill those unused with the code for a space. As this is simply 00 it doesn't take long to enter, nor is it very demanding on memory space. □

```
5    D$ =  CHR$ (4)
7    HOME
10   GOTO 6000
135  H$ = ""
140  IF D THEN A =  INT (D
     / 16)
   :H$ =  MID$ ("0123456789
     ABCDEF",1 + D - A
     * 16,1) + H$
   :D = A
   : GOTO 140
145  RETURN
150  D = 0
   : IF H$ > "" THEN
     FOR I = 1 TO  LEN (H$)
     :A =  ASC ( MID$ (H$,I
       ,1)) - 48
     :D = D * 16 + A
       + (A > 9) *  - 7
     : NEXT I
160  RETURN
6000 REM

TABLET FOR SHAPE TABLES

6001 DIM ST$(100)
     : DIM NB(150)
6005 INPUT "HOW MANY SHAPES
     IN YOUR NEW TABLE";NST
6006 PRINT "STARTING ADDRESS
      TO BE USED FOR"
     : INPUT "NEW TABLE (HEX)
     $";SADT$
6007 H$ = SADT$
     : GOSUB 150
     :DADT = D
     : REM  HEX/DEC CONVERSION
6008 H$ = ""
     : POKE DADT,NST
     : POKE DADT + 1,0
     : REM    NO.OF SHAPES
6009 ADS = DADT + (NST
     + 1) * 2
     : REM  ADDRESS OF SHAPE
6010 S = S + 1
6011 PRINT "NO OF BYTES IN S
     HAPE(";S;")";
     : INPUT NB
6012 FOR I = 1 TO NB
     : PRINT "BYTE ";I;"  ";
     : INPUT ST$(I)
     : NEXT I
6013 LS = (ADS + J - 1)
       + 2 - DADT
6014 D = LS
     : GOSUB 140
     :LS$ = H$
     :H$ = ""
6015 GOSUB 7066
6020 REM

INDIVIDUAL BYTES IN A
SHAPE = ST$(Q)

6084 FOR J = 0 TO NB - 1
     :H$ = ST$(J + 1)
     : GOSUB 150
6085   POKE ADS + J,D
     :H$ = ""
     : NEXT J
6090 POKE DADT + (S * 2)
     + 0,OL
6091 PRINT OL
6095 POKE DADT + (S * 2)
     + 1,OH
6130 H$ = ""
6135 ADS = ADS + NB
6140 IF S < NST THEN
     GOTO 6010
6200 HA =  INT (DADT / 256)
     : POKE 233,HA
6205 LA = DADT - 256 * HA
     : POKE 232,LA
6555 HOME
6560 INPUT "ENTER NAME OF TH
     E NEW TABLE";FT$
6565 PRINT D$;"BSAVE";FT$;",
     A$";SADT$;",L$";LS$
6570 PRINT "NEW TABLE,";FT$;"
      NOW AT  $";SADT$
     : PRINT
     : PRINT "LENGTH =";LS$
6575 PRINT "HIT ANY KEY TO C
     ONTINUE
     :"
6580 GET R$
     : IF R$ = "" THEN 6580
6585 PRINT "JOB COMPLETED."
6590 END
7066 OS = ADS - DADT
7068 OH =  INT (OS / 256)
     :OL = OS - OH * 256
7070 RETURN
**** END ****
```

Double Hi-res tricks

Appletip

This little program from Paul Hughes, which requires Apple IIe 128k, IIc or IIgs, prepares /RAM for use loading double hi-res pictures. This trick also protects double hi-res from your programs which use /RAM as a ramdisc, enabling you to use both double hi-res and /RAM.

```
POKE 49157,0:POKE 956,0:POKE 49156,0   force ProDOS to format /RAM
PR#3                                   turn on 80 columns
HGR                                    display & clear main page
BSAVE PIC.AUX,A$2000,L$2000,S3,D2      clear aux page
POKE 49246,0                           display double hires
```

Turbo Pascal: Innovative, technically superior and easy to use

Turbo Pascal® for the Macintosh™ is the fastest, most efficient and easy-to-use Pascal compiler!

Compiled source code races from Turbo Pascal at the astonishing rate of more than 12,000 lines per minute. Anything less than Turbo Pascal is an exercise in slow motion!

Turbo Pascal: The Pascal compiler for amateurs and professionals

If you're just beginning and you've "always wanted to learn Pascal," now's your chance to do it the easy way. If you're already programming in Pascal, switching to Turbo Pascal will really get you up to speed. Fasten your seat belt and watch your programming get a lot faster and a lot more efficient.

Turbo Pascal: Truly compatible, easy to use

Turbo Pascal is compatible with your Mac's Hierarchical File System, Macintosh Programmer's Workshop Pascal, and Inside Macintosh. You're in familiar territory, but going a lot faster.

System requirements:
Macintosh 512K or Macintosh Plus with one disk drive. (The complete Turbo Pascal package, including compiler and editor, occupies only 50K of memory.)

Turbo Pascal at a glance

- ☑ Compilation speed of greater than 12,000 lines per minute
- ☑ "Unit" structure lets you create programs in modular form
- ☑ Multiple editing windows—up to 8 at the same time
- ☑ Options include compiling to disk or memory, or compile and run
- ☑ No need to switch between programs to compile or run a program
- ☑ Streamlined development and debugging
- ☑ Compatible with Hierarchical File System
- ☑ Compatible with Macintosh Programmer's Workshop Pascal (with minor changes)
- ☑ Ability to define default volume and folder names used in compiler directives
- ☑ Search and Change features in the editor speed up and simplify alteration of routines
- ☑ Unlimited use of available Macintosh memory
- ☑ "Units" included to call all the routines provided by Macintosh Toolbox

The Critics' Choice

"... we're very excited to see Borland International's new commitment to provide (Turbo Pascal) and other modestly-priced, high-quality software for the Macintosh computer.
John Sculley, Apple Computer, Inc.

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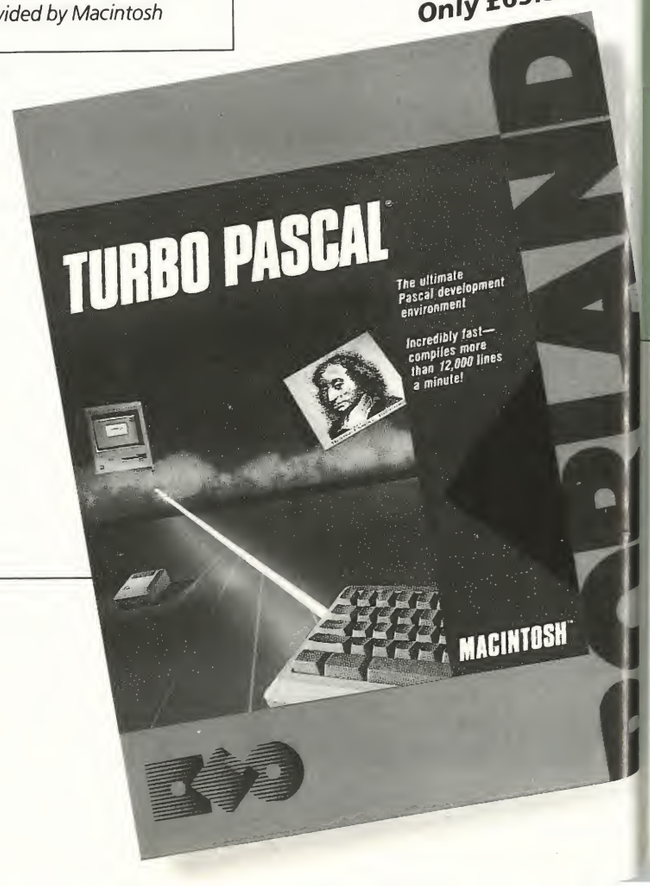

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WHAT YOU HAVE TO DO

Simply answer the four questions, fill in the coupon, and send your entry to arrive no later than September 30, 1987.

1. **What is the screen resolution of the Macintosh Plus?**
2. **How many fonts can be installed in a LaserWriter Plus at any one time?**
3. **Who is the founder of Microsoft?**
4. **Where was the concept of windows, icons, mouse and pull-down menus first developed?**

The first three correct entries out of the sack after the closing date will win the prizes.

P&P, as a distributor, do not supply end users directly, so the winners will be informed by post and the prizes will be despatched with covering letters to their local Apple-authorised dealers.

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ANSWERS

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2.....

3.....

4.....

My local Apple-authorised dealer is:

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Address.....

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Postcode.....

Send to: P&P Competition, Apple User, *Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.*

Bubbling over

THE old king, finding himself in a war that he could not possibly win, put his baby son into suspended animation: Releasing the prince will free the kingdom, and guess who's got to do it?

Luckily, you are guided on your quest by three Spirit Guardians: By returning to them three proofs of fitness you earn the right to fight the final battle and free the prince.

One (or two) of the Spirit Guardians will appear, perched on floating platforms, and tell you which of the proofs you need to bring back. They then disappear, leaving behind a flurry of bubbles.

Shooting a bubble starts your quest. A glimmer shoots off into the distance and you follow it on your jet sled which combines the features of a hovercraft, submarine and jet-plane.

You'll eventually arrive at an island which, needless to say, has its robot defences automatically activated. Shoot a robot and it disintegrates, leaving a pod behind.

Program: Airheart
Price: £36.50
Requirements: 128k Apple IIe, or IIC
Supplier: Broderbund/MGA, 140 High Street, Tenterden, Kent TN30 6HT.
Tel: 05806 4278

This must be collected to prevent a fully functional robot regenerating.

Quite easy I hear you say. But what happens if more than one pod is emitted...

However, enough of this defeatist attitude, on with the game.

Once all the robots are destroyed, venture into the island and collect whatever the spirit guardians have requested. But returning is not quite straightforward.

Find a home island, activate and defeat its robot defences and all is well. At this stage there is a chance to earn another sled, after which you'll be confronted by the spirit guardians again.

Hand over the collected item to them, and in return they'll bestow another life on you and tell you to collect the next item in the list...

Control is by joystick and is simplicity itself. Note though that you cannot fire when underwater – trying to to so will lead to unscheduled resurfacing.

Five instrumentation displays at the bottom of the screen, show lives remaining, treasures collected, compass heading, sleds earned and a clock – unfortunately this seemed to stop at 9:59.

The impression given is that there is a time-limit but this is not so. The clock is included to give you the opportunity to develop increasingly higher scores in the early part of the game.

As to your opponents, there are seven robot types to destroy – though only five of them are dangerous to life or sled. Watch out especially for whompers and zappers. The other two are only put there as a nuisance factor.

A very enjoyable game is made even more so by the finer points of the detailed animation – struggling to escape an encapsulating bubble before popping into oblivion, for example, and the odd flick of the head to shake off excess water after being submerged for any length of time.

The graphics generally – double hi-res 3D – are excellent. And although the box displayed a message saying that the program is recommended for use with non-RGB monitors, I had no problem at all with a Micro-Vitec RGB monitor. A colour monitor is certainly preferable, although not essential.

Airheart comes plainly packaged, as is the norm with Broderbund. It's copy-protected, and accompanied by a small but informative booklet on how to play the game.

As an avid fan of shoot-'em-out-of-the-sky arcade games this is definitely one for my collection of favourites.

Andy Brookfield

Monsters and mazes

FANTASY fans have a treat in store – Electronic Arts has re-released The Bard's Tale.

Twice as big as a Wizardry scenario, it lets you use your Wizardry and Ultima characters, as well as introducing 85 new spells.

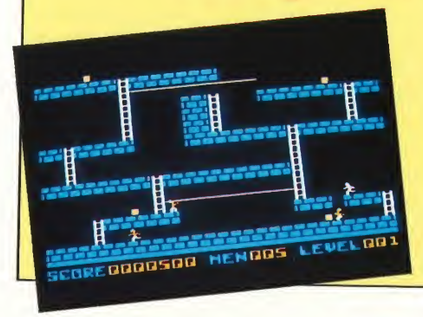
The Bard's Tale requires 64k, but is optimised to take advantage of 128k if you have it.

Written in assembly language, it's fast, big and features 3D scrolling, full colour mazes and animated monsters.

Available from MGA MicroSystems. Tel: 05806 4278.

Prices: Original Bard's Tale, £17.95; Enhanced, £39.99; Bard's tale II, £44.99.

Keep on running



NOT got the time (or inclination) to build your own levels, ladders and tightropes?

Help is at hand for Apple II Lode Runner and Championship Lode Runner users in the shape of an extra disc with another 150 user-created screens.

Available from MGA MicroSystems. Tel: 05806 4278. Price: £6.95.

Floyd is back!

LET'S play a game of Hider-and-Seeker. Now, think, who would say that? Whose antics and chatterings could drive you to drink one minute and in the next elicit an overwhelming sense of affection?

Who never stopped behaving like a little child? Who would carry out an act of heroic proportions and lay down his life for you?

And who,if you were so unkind as to give him an undeserved kick, would mutter "Why did you do that? I think a wire's now shaken loose", and go off into a corner and sulk?

Floyd, the scatterbrained robot from Infocom's Planetfall, that's who. No one who has met Floyd is ever likely to forget him. And if you haven't had the pleasure, now's your chance.

Rejoice, ye stars Sing out, ye moon (Sorry, but that's the sort of effect Floyd has on you). That loveable, maddening mass of mischief returns with a bang in Steve Meretsky's brilliant sequel, Stationfall.

As well as being the author of Planetfall, in which Floyd made his debut and for which Steve won an award for best computer software designer, he also wrote Sorcerer, A Mind Forever Voyaging, the saucy Leather Goddesses of Phobos, and coauthored The Hitchhiker's Guide to the Galaxy. Make no mistake, we are talking of real quality.

As a result of your heroism in Planetfall, you have been promoted. Before you were just a scrubber of decks and cleaner of grotch cages. In Stationfall you are now...

Well, actually, although you're a much higher rank, the job is just as mind-numbingly boring. Your tedious scrubwork has been replaced with tedious paperwork. Forms, forms and more forms.

Take today's thrill-a-minute assignment: You have to pop over to a Gamma Delta Gamma 777-G Space Station and pick up a supply of request forms for Stellar Patrol Issue Regulation Black Form Binders.

Program: Stationfall
Price: £24.99
Requirements: Apple II or Macintosh
Supplier: Infocom c/o Activision, 23 Pond Street, Hampstead, London NW3 2PN.
Tel: 01-431 1101

Aboard your ship the SPS Duffy is your former arch-tormentor Blather (now demoted to deck-scrubbing duties and who whimpers at the sight of you) and a trio of robots in the robot pool. There's Rex and Helen and – your old playmate, Floyd.

You can only take one robot from the pool, and even were it technically right to pick Rex or Helen, could you bear to see Floyd's lower jaw begin to quiver as though he were about to cry?

With the aid of the documentation included it doesn't take too much effort to plot your course and find a way to the massive Space Station.

The 10 blueprints included with the game certainly come in handy with mapping once you've arrived.

You and Floyd are not alone on the station for long. In walks another robot, a bit of a bookworm apparently since he's reading a volume of poetry.

Turns out this is Plato, an older, wiser version of Floyd. Fortunately, he's just as friendly.

It soon becomes apparent that all is not well. The Commander's log makes uneasy reading as it charts the gradual decline of the normally smooth running of machinery and procedures.

The problems all seem to begin with the arrival of a strange alien craft. You soon discover that things are indeed going very wrong.

Roving android mechanics start mistaking you for something that needs spot-welding. Even Floyd starts acting more strangely than normal – or should that be abnormal?

Stationfall has so much going for it. As usual there is the expected deep level of detail, fulsome prose, wide vocabulary, and superb parser. Especially useful is the Ooops facility, which save wear and tear on the fingers when you've made one typo in a long instruction.

And to add to that there is the usual high standard of Infocom packaging, a Stellar patrol patch and three pieces of impeccably presented bureaucratic bumph.

There are Footnotes to read (remember Hitch-hiker? – one of the footnotes does, even if you don't) and even our old friends the Grues put in an appearance. But above all, Stationfall has the single ingredient which (with one exception), no other Infocomadventure possesses – Floyd.

Try to Save your game position and Floyd's eyes will light up as he exclaims, "Oh boy. Are we gonna try something dangerous now?".

Attempt a Restore and Floyd is disappointed, but understanding – "That part of the story was more fun", he sighs.

How does Infocom do it? Just when you think it must have reached a new peak in quality and humour, leaving the rest of the competition in the dust, it ups the stakes. Stationfall will take some beating.

Let the last word be Floyd's: When you next go into your local computer store and spy Stationfall, heed well these words, when you first clap eyes on him in the robot pool, "Oh boy, oh boy, oh boy, pick Floyd, pick Floyd, pick Floyd".

Bob Chappell ▷

Battle stations

Products: Warship, Battle Cruiser
Price: £29.99 and £24.99
Supplier: SSI/US Gold, Units 2 & 3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-356 3388
Requirements: 48k Apple II

STRATEGIC Simulations has built an enviable reputation for itself in the field of computerised wargaming, and has succeeded in transferring a number of scenarios from board to screen.

Generally, the games have been land-based – armour and infantry actions on several scales – but now the company is turning its attention to players who fancy they have the Nelson touch.

Two of the latest additions to the stable, Warship and Battle Cruiser, have been produced to the same high standard as SSI's previous efforts. The games differ only in detail – Battle Cruiser uses the control system that SSI evolved for Warship.

Warship is a tactical-level game, simulating Japanese-Allied naval combat during the last war. It's played out on a 60 x 60 square grid, each square measuring 1000 yards across, which gives you more than enough room for manoeuvre.

For Battle Cruiser, the era is either World War I ("a complete simulation") or surface battles in the Atlantic in World War II.

The playing area is selectable – open sea, historically correct or custom-built –. and this flexibility is reflected throughout the game.

Scenarios can be accurate or "what if?", opponents can be human or computer controlled and elements can be introduced to give almost endless permutations.

Certainly you're unlikely to play the same game twice – unless you want to prove that you've learned from your mistakes.

Once a playing area has been decided, menus allow you to set the scene with your own choice of fleets, air control, missions – and handicaps.

Your choice is limited, but only sensibly – setting a date avoids anachronisms by establishing what ships are available and what the state of their technology is.

Gameplay follows the traditional format of Orders, Movement and Fire: Accuracy of fire is judged by the computer, which also keeps track of how much damage a ship has sustained.

A strength of both games is the care which has gone into research. The accompanying manuals are lavishly illustrated with the ships involved, and pains have been taken to include as much detail as possible.

And in both games you can construct fleets to order – 79 classes of ship are available, from transports to battleships.

But there is a price to pay for this mass of information. Sound is restricted to a shell whine and a muted explosion, which both grate very quickly, and the graphics are less than exciting.

You have a bird's eye view of an engagement, the ships being distinguished only by slight differences in size and shading. You can call up details of a particular ship by positioning the cursor over it, but this can get wearing in a 40-ship battle.

The bottom of the screen is devoted to text, often abbreviated a touch too far. Control is from the keyboard, and gets through most of the alphabet. In fairness, the commands are simple enough – but tedious.

Both games lack visual appeal, and both demand concentrated attention for long periods: Certainly they're not for the 20-minute shoot-'em-up gamer.

But for anyone with time on their hands and a genuine interest in the intricacies of naval warfare, Battle Cruiser and Warship are musts.

Steve Mellor

IT seemed like a bad idea from the start.

Weaponmaster gazed across the dying embers of the campfire towards the four sleeping figures. To expect five untrained adventurers to battle their way across Ymros and recover the Shard of Spring from the evil Siriadne was madness.

Weaponmaster sighed. Rockhunter was in a bad way now after their last encounter with a couple of hill giants half a dozen orcs and a small dragon. The two wizards had been exhausted and barely able to cast more than a small healing spell. The night's sleep would help them all...

The difficulty in reviewing fantasy role-playing games like Shard of Spring is that they are very personal in their appeal. I like fantasy settings and can involve myself in a role-playing situation so I found the game appealing right at the start. If you can't stand wizards, dragons and the rest of the mythological menagerie you aren't going to find it much fun.

One of the measures by which such games can be judged is the degree to which the mechanics of playing intrude. In board games you usually have to throw a die, and at least a computer can "throw" random numbers off-screen. However, computers have their own intrusions.

One I particularly resent is disc swapping: It's annoying, time-consuming and breaks my concentration.

Shard of Spring isn't the worst offender, but it could be improved. It does allow two drives for backing up the player disc, but not at other times such as resetting the dungeons for a new game.

It allows you to save your game at most points and does so without asking for another disc. This is fine unless your characters are all killed off (a common enough occurrence). At this point your saved game is wiped, along with all your characters.

You can back-up a saved game on to another disc, but then you are back to disc swapping. I found the best answer was to remove the disc if things looked sticky, switch off and start again, loading back my player disc to the last saved position.

Another measure of a game has to be the storyline. The background to the present situation, the reason for the quest, the geography and the inhabitants should be at least reasonable, if not realistic. A good game should be like playing a well-written novel.

Unfortunately, most fantasy games not only read like a novel, they incorporate thinly-disguised names and characters from other novels. Shard of Spring was no worse than most, but I did get a few feelings of deja vu.

The graphics are quite good. The main view shows the varying terrain as you wander around Ymros: Use of colour is nice and uncomplicated, so the game looks fine in monochrome too.

Inside dungeons and ruins the view is less detailed, being mainly walls and corridors. Doors are clearly marked (except secret ones, of course.)

The right-hand side of the screen lists the characters in your party and brief details of their current status. It also tells you how much gold and provisions you are carrying.

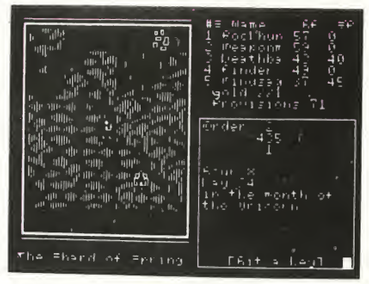
The box on the right can contain various information depending on the current play. While travelling normally, it simply reminds you of your movement keys but will change to inform you when you enter combat and what you will be fighting. In combat it displays whose turn it is and any action taken.

In dungeons, this second window can also give quite detailed descriptions of the rooms you encounter. This adds a lot of atmosphere to the game, almost to the level of some of the simpler text adventures.

Unfortunately, however, the text has in some cases been tied to a particular point in the map and is not cancelled once you have completed that section. This meant that I was informed that a huge orc was about to kill me just after I'd dispatched him. This bug was caught in some places, but missed in others.

While travelling in the countryside your party moves as one and is represented as a single character walking around the landscape. As time passes and night falls the

Dungeons and dragons



Product: Shard of Spring
Price: £19.99
Supplier: SSI/US Gold, Units 2 & 3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-356 3388
Requirements: Any Apple II

distance you can see reduces, and when you camp a little tent is displayed.

In combat your party separates into wizard and fighter characters as appropriate. Your opponents are also shown as fighters, wizards, dragons, skeletons or whatever. These little figures are remarkably detailed and even animate as they move and fight.

Shard of Spring is essentially a fair game, unlike some I've played. You don't meet really difficult monsters on your first few moves and I have never once been ambushed in the immediate vicinity of a village. In combat, your opponents don't use brilliant strategy and it is possible to win against enemies several levels above yours. Another plus was that both in combat and elsewhere, if you didn't move everything waited for you. There was no extra pressure to act quickly and risk a wrong move – handy if the phone rang.

Overall, this is well thought out and implemented. There are a few bugs, but none are particularly annoying or fatal.

Sound is minimal and can be turned off, much to the relief of others in the room.

The manual is clear and the game is user-friendly enough to recommend it to someone who hasn't ventured into this sort of thing before. Addicts will find it involving and demanding enough to keep them playing for weeks.

Denise McKnight

Old favourite

Product: The Print Shop
Authors: David Balsam & Martin Kahn
Publisher: Broderbund Software
Requirements: 512k Mac
Price: £48.50
Supplier: MGA Microsystems, 140 High Street, Tenterden, Kent TN30 6HT.
Tel: 05806 4278

ALTHOUGH I've got an Apple IIc, I usually find myself using the Mac for lots of things which I could do on either machine. A large part of this is because I use a Mac in work and so don't need to think as much about using it.

It's interesting to see what jobs I go to the IIc for. Until recently, if I had a banner to print for the school fete, or a card to make for some obscure occasion, I would usually reach for Print Shop and park myself in front of the IIc. With all the additional utilities I have for Print Shop, like Henry Kong's handy program from the September 1986 issue of *Apple User*, I've been able to do just about everything I've wanted to do.

Now it's different. Now I've got Print Shop for the Mac. Now I have to make a decision, and it's not easy.

Print Shop lets you make greetings cards, banners, signs or letterheads. You choose which of the four things you want to produce and are then led through a series of decisions about graphics, font and text until you're ready to print.

The II version was reviewed in the August 1985 issue of *Apple User*. Although it's written by the same authors, the Mac version looks completely new and uses the full Mac interface. I didn't get the impression it had been dragged across to the Mac so much as rewritten using the same concept.

There is a fair amount of clip art built into the program – a handy chart shows you all the available artwork, fonts and borders – but you're not restricted to that. The clip art can be edited within the program, but more importantly Print Shop will import graphics from MacPaint documents or the clipboard.

This opens up a whole range of possibilities, not just limited to MacPaint. For example, many more powerful programs – like SuperPaint, for example – will save pictures in MacPaint format. Hence, it may take a bit of work but you should be able to get all your favourite artwork into Print Shop.

Also, utilities like FKey9 and Camera will capture just about anything to the scrapbook so there's no excuse for limiting yourself to Print Shop's built-in artwork.

Having designed yourself an amazing letterhead, you obviously want it in your word processor, so the manual guides you through cutting it to the clipboard and pasting it into MacWrite, warning you that MacWrite will shrink it slightly because it's a touch too wide.

The manual is a 48-page A4 affair which really does start from scratch – "If your computer is off...". As well as the manual and the font and graphics reference card, the Print Shop pack also contains some nice quality red pin-feed paper and some envelopes.

You have to be careful with the paper, though, because the micro-perforation of the pin-feed edge makes it liable to fall off while you're loading it in the printer.

If you've got an ImageWriter II or a Scribe, you can print your designs in colour. There are some LaserWriter hints too, but this isn't really the sort of package you'd expect to be outputting to a LaserWriter. It's much more 'home entertainment' than 'office' software. As the manual points out, the LaserWriter won't print to the edge of the page and prints on separate sheets, so banners are a bit tricky.

The idea may be a bit long in the tooth, but Print Shop works well. If you've got a Mac at home and aren't too happy with the kids playing zap-'em-up games on it, buy them Print Shop and wait to see what your next birthday card looks like.

Pat Cookson □

Taking the plunge

Ken McMahon and Bohdan Buciak have carved themselves a niche in the DTP marketplace. How?

PELICAN Graphic Publishing began in earnest at the AppleWorld show in Islington's newly refurbished Business Design Centre at the end of October last year.

The doubts we'd had about desktop publishing – Was Apple committed to it? Was it just a flash in the pan? Was the hardware and software up to the job? – were, if not entirely removed, at least sufficiently allayed for us to feel comfortable about taking the chance.

It was then that we made the decision to give up our steady jobs, kiss goodbye to our comfortable salaries, and throw in our lot with the DTP revolution.

It was to take another four months before Pelican got off the ground – not exactly what you'd call a flying start. The business considerations involved in starting a DTP bureau are, I would imagine, pretty similar to those for a sandwich shop, garage or any other small business. Finance has to be obtained, suitable premises have to be located, market research has to be carried out. A multitude of other petty tasks present themselves: Furniture has to be bought, offices decorated and stationery designed.

At least the last is no problem for the desktop publisher.

But there ends the analogy between DTP and its small business counterparts. It is a specialised market combining the traditional typographical and printing skills allied with with latest developments in microcomputer technology.

As computer journalists, we were ideally suited to exploit the situation. On the one hand we were well acquainted with the conventional production processes; on the other, we had a pretty good view of the direction the micro industry – following Apple's lead – was taking. Both ends of the equation were converging and we were right in the middle.

In a situation with a lot of unknowns, two important questions remained. Was the equipment up to the job? And, even if it was, were there enough people out there willing to give notice to typesetters and consign scalpel and Spraymount to the dustbin?

We could have bought a Canon DTP system, or several PCs and Ventura Publisher, or opted for Atari STs and Fleet Street Editor. Why then are we sitting here with two Macs, and 20Mb hard discs to match, hooked up to a LaserWriter Plus?

The short answer is that there is nothing to touch it.

The biggest thing in favour of the PC is what it's always had going for it – lots of other people have one. Disregarding the Catch-22 implications of that argument for the moment, the advantage of being a PC-based bureau is that you can take copy on disc and avoid the time and cost-consuming process of keying in.

There are two ways around that one. You can either buy a PC and network it to the Mac, or save yourself the expense by getting someone else to do it for you – which costs about £15 a time.

The PC option is also cheaper – by several thousand pounds for a system equivalent to our Mac set-up. But price was not high on our list of criteria.

Paramount was the ability to provide a professional service to clients who have high standards of what is acceptable, based on what is achievable with traditional technology. Whether you are able to do that depends as much on the functionality of the hardware and software as on your ability to exploit it to the full.

The Macintoshes and LaserWriter are up to the job. The system isn't perfect, but it's better than anything else we've looked at, it will continue to be supported and it can be expanded and improved upon.

In terms of hardware, the imminent addition of full page display screens is the next step.

When working at full size, being able to see only a small part of the page slows things down considerably, and at reduced sizes it's impossible to get an accurate representation of the page. This means having to output pages, which slows things down even further.

We decided against scanners from the outset. The quality isn't good enough – yet – for half-tone reproduction, and 99 times out of 100 a more straightforward solution is to PMT photographs.

Reproduction of other artwork is, to say the least, inconsistent. With everyone other than the manufacturers OCR seems to be something of a dirty word.

Between them, Pagemaker, XPress, MacDraw, Cricket Graph and MacWrite handle just about all the miracles we are called on to perform. If it can't be done with one, or, as is more often the case, with a combination, we occasionally resort to old-fashioned cut and paste.

Left Ken McMahon and right Bohdan Buciak

PageMaker V2.0 and XPress are state of the art: There are things you can't do, and things that could be made easier, but once again, there is nothing to touch them.

There is very little that cannot be done with the LaserWriter Plus's 11 typefaces. The only occasions we have needed additional fonts have been when a client has wanted to match a face on an existing publication. Where we've not had the exact face we've usually been able to come up with something pretty close.

The use of downloadable fonts raises an additional problem where Linotronic output is required. Because of the copy protection it's necessary for the bureau with the Linotronic to have its own copy of the downloadable font you have used.

The problem for the desktop publisher looking for a market is that he is surrounded by them. Virtually anything produced by conventional means can be designed and produced on a desktop system – in many cases faster and less expensively.

Nearly every day I find myself reading a magazine, newspaper, theatre programme, restaurant menu, advertisement or whatever and thinking "we could do that" and, more often than not, "and we could make a better job of it too".

Our initial idea was to launch a magazine, but despite the production costs the Mac would have saved us, we were only too aware of the high investment and risk involved. Regardless of how well thought out and researched they are, such publishing ventures can be doomed to failure by the merest market whim.

We decided a more solid base for a virgin enterprise would be to offer a bureau service designing and producing other people's publications.

The market for what we do falls neatly into two sectors. One is occupied by producers of publications which employ conventional typesetting and cut and paste methods. The other area crying out for desktop publishing is the mountain of reports, proposals, flyers, mailshots and other budget-produced material.

We have been successful in attracting clients in the former category because we can offer less expensive, faster and more flexible production with no compromise on quality.

Whether a publication is actually produced in-house, or by an agency, ordinarily copy would be sent for typesetting, returned for corrections, sent with a rough layout for make-up, then returned for final corrections. Alterations are a time consuming and costly extravagance.

Our clients receive page proofs 24-48 hours after supplying us with the original copy, because subbing, setting, layout and paste-up is carried out in one operation.

Usually they will want to make changes: A headline needs rephrasing, a late story needs to go in, or some figures need to be amended. But a process that might take days by conventional methods is reduced to hours, even minutes, on the Mac.

For those whose budget runs to little more than a typewriter and photocopier, desktop design can provide an improvement in quality that far outstrips the cost involved. The argument has a logical appeal to it.

Whether it's a press release, flyer, newsletter or mailshot, the likelihood is that it will look exactly the same as the thousands of others people throw away without a second look. Most people agree that it's worth the additional expense to produce something people will want to read – which, after all, is the object of the exercise.

The diversity of what we produce is evidence enough of the system's (and hopefully our own) diversity.

In addition to company newsletters we produce classified and display advertisements, full page :"advertorial" features for tabloid newspapers, graphs, charts and other illustrations for magazines and financial reports, running boards for PR presentations, corporate identities and stationary, OHP transparencies and posters.

Long queues of punters, eager to sample the joys of desktop publishing, have not yet started to form outside the door. Despite the TV and media advertising campaigns a surprisingly large proportion of the publishing world remains ignorant of, or worse, antagonistic towards DTP.

First there are the people who, 10 years ago, would have (and probably did) sworn by hot metal and shaken their heads in disgust at the poor quality of phototypesetting.

It's true that the quality of laser output is comparatively poor, but it's good enough for a great many things – and if it's not, ▷

In-house publications, reports, graphs and charts are all grist to the Pelican mill

nobody can complain about the quality of Linotronic 300 output.

It also has to be said that you don't need to look too hard to find a lot of poor examples of desktop design. That has less to do with the equipment than with the people using it, but it does little to further The Cause all the same.

What makes it worse is that, generally, poor design has little to distinguish it other than that it looks dreadful: You can spot a badly desktopped job a mile off.

Where does it all go from here? One thing I don't see happening is bureaux like ourselves having a significant impact on mainstream publishing.

If there is a revolution there, it will come about through development of dedicated electronic typesetting and page makeup software. Unlike DTP it will work from the top down, and like all its predecessors will be enormously costly.

But where we can carve a niche for ourselves will be by providing economic, but high quality design in areas where traditional methods are inappropriate and creating publishing opportunities where they would not otherwise exist because of high costs. Every publication we produce reinforces the case for DTP.

Bohdan Buciak is a former deputy editor of Commodore User, Ken McMahon an ex editor of Sinclair QL World. They formed Pelican Graphic Publishing in February, 1986.

Creative tips

THE latest edition of Colophon, Adobe Systems, quarterly newsletter, includes a new section on advanced techniques with Adobe Illustrator.

Its aim is to look at creative ways of using the program, concentrating in this instance on layering techniques and designing logos.

The design shown here was created freehand and the process is described in easy-to-follow and well-illustrated steps: The curved lettering was achieved with one of Illustrator's standard features.

AppleWorks – – HELP

Peter Hawks sorts out a few ideas for databases

ONE problem I find with the AppleWorks database is that it seems designed to produce a single list in numerical or alphabetical order – like the ordinary telephone directory. More often though, I need lists organised in separate categories under subheadings, along the lines of the Yellow Pages.

Take for example a list of software. Let's say that as each new disc is acquired you number it consecutively and assign it to one of the following categories: Games, Business, Utility and Education. Your software database might then look something like Figure I.

Printed in this form it would be quite handy in its own way, but you would probably prefer to organise it under four subheadings, each group being in alphabetical order by program name.

Here's how to go about it. First decide on the format around each subheading. Let's have, say, three blank lines following the previous group, then the subheading on the next line, followed by the underlining.

Now to produce the subheading for Games. We need five additional records (that is, lines of database).

The first three records will be completely blank except for entries in the Category column. The entries in this column are: **Gam1, Gam2** and **Gam3**. Notice that we have chosen an abbreviated form of the word Game, followed by a number, but without any intervening space.

Next the subheading itself, **GAMES**, which is typed in the Program column and assigned the category **Gam4**.

Then comes underlining, which can be according to taste – for example, a row of five equals signs. Alternatively you can use the dead worm key (that's the one to the left of Return) to give ~~~~~. The underlining is categorised **Gam5**.

Your entries should look like those shown in Figure II.

Repeat the exercise for the other categories, using **Util1...,Bus1...** and **Edu1**. In the case of the subheading Business, which will be the first in our catalogue, you should of course omit the preceding three blank lines.

Now to print the finished product, having selected Open Apple+P:

- Specify the report format "Categorised".
- Swap the Program and Disc No. columns to put Program first.
- Use Open Apple+A to sort Program alphabetically.
- Then use Open Apple+A to sort Category. Note that AppleWorks puts Bus1, Bus2 and so on before Business, while the items labelled Business remain sorted by alphabetical order of program.
- Delete the Category column with Open Apple+D
- Use Open Apple+N and return to specify your title.
- Press Open Apple+P – and off we go.

Figure III shows an extract from the printout.

If you wish, your list can still be printed in its original form – by numerical order of disc number.

But don't forget to specify Disc No. "is not blank" in your record selection rules – otherwise there will be a lot of garbage at the beginning. □

```
File:   SOFTWARE LIST                                  Page  1
Report: NUMERICAL
Selection: Disc No. is not blank
Disc No.     Program                          Category
----------   -------------------------------  ----------
001          Dos 3.3 Master                   Utility
002          Apple Presents Apple             Education
003          PFS File                         Business
004          PFS Report                       Business
005          Pick-a-Dilly                     Games
006          Typing Tutor                     Education
007          Maths Quizzes                    Education
008          Stickybear ABC                   Games
009          Stickybear Numbers               Games
010          Masquerade                       Games
011          Multiplan                        Business
012          AppleWriter                      Business
013          Kidwriter                        Education
014          Apple Logo                       Education
015          Utility City                     Utility
016          Computer Awareness               Educatior
017          AppleWorks                       Business
018          Print Shop                       Games
019          Prodos Users Disc                Utility
```

Figure I: The unsorted database

```
Program                                  Disc No.     Category
=======================================================================
                                                      Gam1
                                                      Gam2
                                                      Gam3
                                                      Gam4
GAMES                                                 Gam5
~~~~~
```

Figure II: Organising the subheadings

```
                                                              Page  1
JOHN SMITH'S SOFTWARE LIST - SEPTEMBER 1987
File:   SOFTWARE LIST
Report: CATEGORISED
Program
                                                    Disc No.
BUSINESS
~~~~~~~~
AppleWorks
AppleWriter                                         017
Multiplan                                           012
PFS File                                            011
PFS Report                                          003
                                                    004

EDUCATION
~~~~~~~~~
Apple Logo
Apple Presents Apple                                014
Computer Awareness                                  002
Kidwriter                                           016
Maths Quizzes                                       013
Typing Tutor                                        007
                                                    006

GAMES
~~~~~
Masquerade
Pick-a-Dilly                                        010
Print Shop                                          005
Stickybear ABC                                      018
Stickybear Numbers                                  008
                                                    009

UTILITIES
~~~~~~~~~
Dos 3.3 Master
Prodos Users Disc                                   001
Utility City                                        019
                                                    015
```

Figure III: The finished result

Over-protective?

Cliff McKnight puts the case for guilt-free back ups

ONE morning, a couple of weeks after my first Mac had arrived, I turned it on and shoved a disc in the drive as usual. By this time I'd got used to the happy face so was more than a little surprised when it failed to materialise. Instead I got the sad face, black cross and the disc was ejected.

"Drat!" (or words to that effect). "Must be something wrong with the disc", I thought, so shoved another in. Same performance. "I wonder how two of my discs have got corrupted?" I thought as I reached for another.

OK, so you're way ahead of me. Well, it *was* first thing in the morning, but as I reached for the third disc it occurred to me that it might not be the discs that were naff but the drive.

A visit to my local dealer confirmed it. The drive needed replacing and the two discs I'd tried were late (as in "the late Arthur Dent"). The first disc had been a MacWrite disc so I'd lost a couple of articles which I'd been working on. The second had been a general disc containing some utilities that one of Apple's people had given me.

If that same incident were to repeat itself today, it could be Excel or Pagemaker that gets wiped out. My sermon for this month, then, is taken from the First Book of Copy Protection.

Accidents can happen

I thought I'd seen all the protection schemes and heard all the arguments before, but a few new ones seem to be hitting the Mac market so I think it's worth making the points again.

The basic assumption I make is that accidents can happen. It may be a hardware problem like my drive, or it may be nothing more than carelessness (and I've been guilty of that too). Either way, discs can get corrupted and their data lost.

The obvious answer is to have a back-up copy of important files, or even *two* back-up copies of very important files, one locked in a fireproof safe.

Such measures would be a bit OTT for a disc full of my articles, but if it was five years of research data or the complete company personnel record it would be a different picture. The recent fire at the Open University which hit the headlines shows that such events are not always hypothetical.

The problem arises with protected software. The software company obviously wants to protect its investment. After all, a lot of work goes into writing and developing a package and getting it to market. On the other hand, the user obviously wants a back-up in case of accident.

The answer? Well, historically the first answer has always been copy programs. Rather than solving the problem though, this answer is merely the first half of a vicious circle. Once a copy program is released, the software houses see which protection methods it can beat and then devise others which it can't beat.

For their part, the copy program authors are constantly trying to bolt on new bits to cope with increasingly convoluted protection schemes. Round and round we go.

Excel is a case in point. Its release was apparently delayed until the company was happy with the copy protection, yet a copy program which claimed to copy it appeared only a fortnight later.

The cost and human effort involved in protecting and deprotecting must be enormous. Keith Lander, one of the authors of MacAuthor, revealed that the first releases of the program contained 20k of copy protection code. It's interesting to note that the latest issue of MacAuthor has had this replaced by a simpler once-only entry of user name.

I know two guys who make a reasonable living writing copy protection routines for software houses, and the reason they can do it so well is that they're good hackers who can crack other people's methods.

Both Pagemaker and the original MacAuthor illustrate a possible solution to the back-up problem. Both programs are copy protected, but registered users receive a free back-up copy of the program. This is a laudable attempt to find a solution which gives both user and author some measure of protection.

Hard drive problems

Having praised these two programs, though, I have to say that the solution is far from satisfactory. "He's got back-ups, what more can he want?", you ask. Well, the answer is that I want to run the programs from my hard drive.

Pagemaker is one of those programs, like Vicom, that asks for the original disc when first booting the hard disc version. Unlike Vicom, Pagemaker has the advantage that it gives you the original back as soon as it has validated it. Even so, I like to keep the originals in a safe place and it is a nuisance having to get them out, put them in the drive then put them away again.

MacAuthor's method of dealing with hard drives was to allow the user to install the program up to three times. A count was kept on the original disc and copies could be 'de-installed', in which case they were re-credited on the disc. Seems reasonable, doesn't it? It's the system that's now used by Quark XPress, so I'll tell you why I don't like it.

One night I left one of our programmers on my Mac, using MacPaint to produce a poster for his squash club. He'd never used a Mac before. When I tried to boot the system the following morning, I discovered that he'd somehow crashed the hard drive – 20 megabytes down the proverbial RS232 interface, including installation #1 of MacAuthor.

Losing installations

When I recently recruited two new research associates I naturally extolled the virtues of the Mac. In my absence, one of them decided to get to grips with MacAuthor. He took the disc from the box and followed the procedure to install it on one of the volumes on the hard drive ... then realised it was already there on another volume so dragged a copy to the trash-can. Whoops, there goes installation #2.

The same sort of things happened to Excel, so I wrote to Microsoft asking what I should do. Microsoft didn't write back, but phoned several weeks later while I was out of the office. The gist of the reply was that I should install a copy from the provided backup disc – hardly a suitable solution since I'd already used up that installation.

In the meantime, I'd provided my own solution by using Copy II Hard Disk. Without it, I would still be unable to use Excel on my hard drive, despite having the package sitting on the shelf. Assuming my experience is typical, it's obviously all too easy to "lose" installations.

I've got two daughters who both enjoy using the Mac. When the younger one was three years old she used to announce proudly that the Mac was her favourite computer. The elder 9-year-old has been using various kinds of Apples for six years now. Even though I trust both of them, it's a big responsibility for them to bear if they use original discs.

If a professional programmer can crash a ▷

hard drive, would *you* entrust £26.95's worth of Deja Vu to an 9-year-old like I do? To be honest, I worry more about how upset I know *she* would be if the discs were accidentally damaged than about the discs themselves.

Very soon now I'm going to refuse to buy copy-protected software. However, I don't want software authors to starve – I rely on them to make many of my tasks easier and they deserve their rewards.

Of course, if more users were honest it might serve to reduce the authors' paranoia and bring prices down too.

The recent spate of HonorWare is an excellent example of what might be done in the way of reducing prices by increasing honesty.

For example, having evaluating Red Ryder for a month, I paid the fee to become a registered user. For $45 I get guilt-free use of a program I wish I'd seen before I paid out for protected software costing four times the price.

On the other hand, I have a copy of MockTerminal on one of my archive discs and I've given copies of it to other people, but you won't find it installed on any of my discs because it just wasn't satisfactory for my purposes. No doubt many people do use it, though, without having paid for it.

As usual, then, it's up to you and me – the users. Collectively we have more power than you might imagine. Obviously, it would be naive to suggest that every user could abandon copy-protected software overnight.

If you want a really powerful spreadsheet then Excel is the obvious choice with or without copy protection. Even so, it's interesting that Microsoft has released both Works and Word 3.0 without copy protection.

Where there *is* an unprotected alternative, though, let's start repaying the author's trust a little more. After all, their kids have to eat too. □

Apple*tip*

AppleWriter

THIS tip is expanded from one in Feedback in July's *Apple User* to make AppleWriter print through the IIgs serial printer port. It originally came from Don Lancaster's AppleWriter Cookbook and Open-Apple.

This is a patch involving three bytes to czxoe in the file named AWD.SYS. Unfortunately the three bytes are not the same in the two different versions.

First, boot Prodos and execute the FILER and make a copy of your AppleWriter disc. Put the original away and work with the copy. Exit the FILER and run BASIC.SYSTEM so that you see the] prompt.

Now type CALL -151 and enter the monitor so that you see the * prompt. Load the file with:

```
BLOAD AWD.SYS,TSYS,A$2000
```

Now, if you have version 2.0 type the next three commands:

```
4DB0:60 4F67:10 4F6E:13
```

If you have version 2.1 type:

```
4DC7:60 4F7E:10 4F85:13
```

Now unlock the file held on disc with:

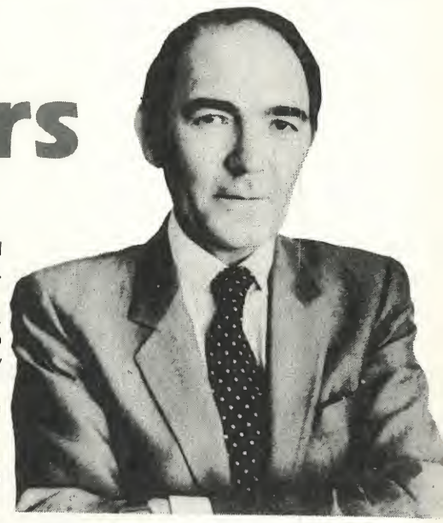
```
UNLOCK AWD.SYS
```

and save the patched version back with:

```
BSAVE AWD.SYS,TSYS,A$2000,L$4000
```

Finally, relock it with:

First-time users



"Writing is much easier using a VDU" says latest James Bond author John Gardner

A new television series promises to relate micros to the real world. Ian Byfield investigates

APPLE IIs and Macintoshes feature prominently in a television series exploring the world of micro technology.

The Channel 4 series, So We Bought A Computer, sets out to cut through the jargon to discover the needs and experiences of real people, some venturing for the first time into the world of computers.

One real person who uses a computer to create unreal people in an unreal world is latest James Bond author John Gardner.

At present he uses a Macintosh Plus and an Apple IIc. And he's planning to buy a Macintosh II and link it up with Appletalk to create a network at his home so that while he goes on writing in his study, his wife, Margaret, can do the correcting and preparation for laser printing elsewhere.

Naturally enough his main operation is word processing but he also has to maintain a large database for each novel.

"When you have up to 180,000 words with 18 major characters you need a database to keep track with what's going on", he said.

Character references

He keeps all the minute personal details of each character and locations stored in this database for quick reference. And that makes life easier all round.

"I don't have to search through pages and pages to discover which hand a character picks his nose with", he quipped.

"Using computers has completely changed the way I work. I find writing much easier using a VDU than using a typewriter".

He recently sent a manuscript to the US and was told he had to cut it by 30 pages. Thanks to the Macintosh he was able to call up the words from disc and finished the editing at home within a day.

"In the old days it could have taken four or five weeks to complete an editing exercise like that".

He is not keen to go the whole hog, however, and send books to publishers on line.

"I still prefer to present a nicely-produced manuscript - which is why I have a laser printer". He even uses it for personal letters.

John has been using computers for about 10 years now, gradually working his way up to the Apple range.

"I got a Mac Plus because I thought I should be moving into icon technology. Now I wouldn't be without it".

Apple IIcs are proving indispensable, too, to a group of technicians in Sheffield who run a traffic light repair service almost by default.

Traffic Systems was set up by seven men with a lot of experience between them. Made redundant from an electrical giant, they immediately went into competition with their former employer.

But as administrator Steve Broadbent explained, while all the men were able to do the job of maintaining traffic lights, maintaining books was a different matter.

"We knew we had to be in control of the financial aspect of the business if we were to survive", he said

"Though none of us had any great knowledge of computers we thought that it would be as easy to learn about accounts on one as in longhand".

Traffic Systems opted for AppleWorks, with its integrated database, spreadsheet and word processor.

"The technology has saved us time and allowed us to get on with our real work without being bogged down in the office", said Steve Broadbent.

These are just two of a very wide range of people highlighted by So We Bought a Computer.

In the first programme the Provost of Wakefield the Very Rev John Allen showed how his computer helps him in his work and mission. Also featured were a woman who produces a magazine for competition addicts, and news of how the national organiser for the Gingerbread day care group keeps track of what is going on.

The second programme visited a windswept field in the Vale of York where an archeologist and his team keep computer records of their work, and a riding school near Ripon where a database keeps things on the rails.

Applications

Other programmes deal with small business accounting, particularly at a photographer's in Manchester, a butcher in Hertfordshire and a fruit farmer near Bromsgrove.

And computer aided design is not neglected. Examples are shown of how kitchen layouts and costings are created in a fraction of the time they once were, thanks to micro power. Engineering drawings, too, are now produced much more efficiently, so preventing waiting time in the workshop. One episode even shows how a graphic designer preserves confidentialty for his clients.

The series also focuses on comms – how the ability to exchange information between computers is used to advantage by chemists to replenish stock quickly, and how comms help container depots to exchange details of repair work. Also on-line are a businessman who keeps in touch with the office as he travels the world, and a doctor in Oxford doing valuable research into the causes of cot death.

The six half-hour programmes on Monday evenings were made for C4 by Yorkshire Television. The emphasis, says Mary Hunter, Community Education Officer at YTV, is on the use of personal computer as a problem solver and its effect on the quality of life of those who use it.

Job satisfaction

The benefits to be gained, cost saving, changes to working practice and the effects on job satisfaction are also considered. The series raises questions, too, about the selling and installation of computer systems.

It sets out to discover what advice, if any, was sought by the buyer, where from and how good it was. The delicate area of labour relations over the introduction of technology is also investigated. Most importantly, people are asked if their systems are as suitable for their application as the salesman promised.

Each week, a short studio interview is sandwiched between the series of features about people using computers. Topics under discussion range from health and safety through where to obtain training and advice and the implications of the Data Protection Act to the effect on the job market of increased efficiency in an organisation.

YTV also plans a viewers' guide which will include advice about selecting hardware and software and sources of information. □

Apple *User* Classifieds

Has upgrading your computer given you hardware you no longer need? Or have changing interests left you with unwanted software? Then THIS is the place to advertise your surplus items. *Apple User* readers are always on the lookout for a bargain and this is the first place they look!

An added bonus!

Your advert will also be automatically displayed on MicroLink, the electronic mail service operated in association with Telecom Gold. This means it will be seen by thousands of computer enthusiasts who can send an instant response.

Classified advertisements will be accepted under the following conditions:

- This service is EXCLUSIVELY for the use of private readers. No trade ads will be allowed.
- To avoid encouraging software piracy, all ads will be carefully vetted before they are accepted.
- Ads can only be accepted on this form (or a photocopy of it).
- There is no maximum to the number of words you include in your ad. If there is insufficient room on the form, continue on a separate sheet of paper.
- The cost is 20p per word, with a minimum of 10 words.
- We GUARANTEE your ad will appear in the October issue (on sale September 30) providing it is received by August 28.

● Wordwise Plus, Wordaid, manuals, Registration Card £30. Tel: 051 342 2060.

● Apple IIe twin DD green mon, 16k, 80 Col Z80 serial cards. Modem + s/ware. W/Star Dbase II. Old working printer £550 o.n.o. Tel: Bracknell 56574.

● Apple IIe, green monitor, 80 column text card. £100 o.n.o. Tel: Eric 01 207 4725.

● Enhanced IIe. No monitor, but 128k/80 column £275. Drives if required. II+ original software / cards. Tel: 01 393 7063 evenings.

● Many Apple cards including Accelerator RGB and Eprom Programmer. Tel: Mike 0383 416688 for details.

● Wanted CCS serial card 7710A for Apple II Europlus. Tel: Evenings 0784 58583, Day 01 751 6514.

● Imagewriter printer 15" Mac and IIC cables £220. IIc Mouse with software. Offers. Tel: 0372 67784.

● Mac Plus as new £1,275. Tel: 0525 24243.

● Apple II Europlus software for sale:- Business Graphics, Tabs, Integer & Applesoft, Parallel printer interface card, Microsoft card (Z80). All original and in excellent condition. £80. Tel: 0992 463164 evenings or weekend.

● Miracle 2000 modem auto dial auto ans software Serial parallel interface card and cables £100. Tel: (0638) 667975. Mailing cost included.

● Apple IIe enhanced Duodisc Z80, 80col + 64k Super Serial, Parallel, TV-Mod Cards LX80 Printer, Brother IF50 interface (new) + cable software. Will separate. Offers. Tel: 01 539 6361.

● For Sale: Apple graphics tablet. For details call Ross. Tel: Potters Bar 56166 after 5pm.

● Europlus 48k Philips monitor, 1 disk drive, 1 10MB Symbiotic hard disk, Videx 80 col card, Epsom parallel printer card. Offers. Tel: Keith Choat 0440 820200.

● Apple II peripheral cards, 80 col 64k IIe only Z80 (CPM), Epson printer card, Drive controller £27 each. Buffered Grappler, AD/DA 8 Bit, Super Serial card £60 each. Mockingboard and ALF type music cards, clock card, 80 column Videx, £45 each. IC tester £70, Joystick £15, 16k Language card £27.50, 128k Ram card (Saturn) £75. Communications £32. Eprom Writer £45, Graphic mouse with software £45, 70w power supply £42. IEEE-488 GPIB Interface £65. Tel: 01 736 7809 Ev/Wkend.

Fill in now for the next issue

					10 words £2.00
					15 words £3.00
					20 words £4.00
					25 words £5.00
					30 words £6.00

Cheque enclosed for £_____

I certify that any software offered for sale is original and not a copy

Signed_____

Name_____

Address_____

_____

POST TO: Apple Classifieds, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Altering icons

INSPIRED by Duncan Langford's articles on opening up the Mac using ResEdit 1.0, I have been able to make some very useful changes to some of the applications that I use a great deal.

Just being able to add some key equivalents to the menus has made working in these applications feel really different and saves so much time. I am looking forward to more!

A question arises, though. Having made some of these alterations it seemed to me to be sensible to attempt to make some minor alterations to the application icons, to make recognition of the modified application easier from the desktop without having to resort to Get Info.

However, I find that having altered the icon from within the application, I am still left with the original icon on the desktop. On opening up the desktop file I find that sure enough, it's still there.

Being naturally curious, I wonder if you can help? – **C. Russell-Pavier, London**

● Not only is Duncan inspirational, he's also psychic – he tackles just this problem in his column this month.

For....

I HAVE been using AppleWorks (Version 1.0) for about a month on my Apple IIe – I mainly use the word processor, for letters and school work. I find it very easy to use, and practically flawless.

There is only one problem: When I set my FX-80 to start printing, the letter O is printed along the left hand side, and for each line printed there is also a letter O.

Please tell me if there is any way of fixing this problem, which must surely be a fault of some kind.

I would also like to say how impressed I was with the June issue of Apple User. *I immediately noticed the increased price, and then realised that I had got a much thicker magazine, with a glossy front cover on it.*

Is this a one-off issue? I hope not, because the new look is well worth the extra 25 pence! – **Kevin Gordon, Burgess Hill.**

● We think it is zeroes rather than Os being printed, which immediately suggests that you have a problem with your interface card.

You should be able to solve the problem by changing the printer control codes from within AppleWorks.

Choose the Specify information about your printer option from the Other Activities menu – you'll probably find the default is set to Control–I 80N. Change this to "none". To have the change accepted, leave the screen with Shift+^, not with Escape as is usual.

First, however, make sure that you update your AppleWorks – you are several versions out of date. Your dealer should be able to help.

...and against

ON receiving the July issue of Apple User *I have reached the stage that I must register my disapproval of the trend that has appeared over the last few months. At one time this magazine was catering for all users of Apple II computers, and on occasions the Lisa and Macintosh range. Now, however, I find that the majority of the content is devoted to the Macintosh or, more recently, to the Apple IIgs.*

Isn't the magazine devoted entirely to the Mac sufficient, or do we have to surrender our magazine as well?

In addition, we also have the situation that your readers have to become master programmers, for there is nothing of interest for the more simplistic type of reader – I am still trying to fight my way through the AppleWorks manual.

You still have readers, believe it or not, who get tremendous enjoyment from just using their computers as they came, without extra ram, rom or even an additional disc drive.

Please ... I chose Apple because I liked the look of the equipment as well as the simple (?) instructions that came with it. – **A.I.S. Ferguson, Zimbabwe.**

File transfer

COULD you possibly help me with a problem concerning data files on the Commodore 64?

I have data stored in program binary files in Ascii format and I wish to use them on my Apple II. Is there a way to transfer them from the Commodore?

One initial problem I foresee is the different format of the discs – or would it be done via the ports? I would appreciate any help you can offer. – **Brian Sayers, Dublin.**

● You could use the serial ports – if you have a serial card in your Apple. You will need some rudimentary software in each machine, but simple Basic programs will be okay at 300 baud.

If you don't have an Apple serial card it might be possible to use the games port.

Treasure trove

I DON'T know if the following information regarding items in the last couple of Apple User *Feedback columns will help readers, since some USA products may be difficult to obtain in the UK.*

I know it works in reverse from trying to get hold of some Cirtech products – most of which I class as excellent – for US users.

To M.Moyse (June, 1987): There is a US company specialising in Apple II and Lisa products, along with some other "outdated" Apple items. The company is Sun Remarketing, PO Box 4059, Logan, UT 84321, USA. For information phone (801) 752-7631, or orders only on (800) 821-3221.

To G.Inglott (June, 1987): A group in the US sells a product that, along with other ▷

◁ *functions, converts Print Shop graphics into Newsroom format.*

PLUS ($24.95) is available from the Big Red Apple Club, 1105 South 13th Street, Suite 103, Norfolk, NE 68701. Tel: (402) 379-4680.

To R.Manners (July, 1987): There is a commercial utility called Universal File Conversion ($34.95) available from Quality Software, 21610 Lassen #7, Chatsworth, CA 91311. Tel: (818) 709-1721.

This will interconvert text files and some other types of data files between Prodos, Dos, UCSD (Apple Pascal), and CP/M, though it is limited to 5.25in formats for most if not all transfers.

I believe it will support transferring hi-res images into Pascal FOTO files, though my experience (and recollection) of the program's features are limited.

Having seen some of the interesting materials available from Cirtech, I'm hoping that some kind of channel can be established between the US and Europe (at the least) to exchange information on useful products.

Cirtech is virtually unheard of here, yet I often find myself referring to the company with specific problems – how to find room for a CP/M board in a fully-carded IIe, for example, or how to use CP/M or Pascal 1.1 from an Apple Slinky-type ram card.

Elite has just made it to my neighbourhood. One US program I can recommend very highly for Prodos disc management (UniDisk 3.5, ram discs or hard drives) is ProSel. I'd be interested to know if anyone "over there" has seen it yet. – **Dennis Doms, Open-Apple, Kansas City.**

Integrated choice

CAN anyone help? I need an integrated software package for a membership society to run on my Apple IIe.

I need the computer to cope with quarterly accounts, chasing late payers and so on, as well as membership details and word processing.

I also need to be able to list members by different groups or postal towns and other Divisions. – **Nigel Costley, Gloucester.**

● AppleWorks would seem a logical choice, offering as it does a word processor, database and spreadsheet – ideal, respectively, for correspondence, mailing lists and accounts.

On its own it will handle all your basic requirements, but to take full advantage of it you would need to expand your IIe, at least up to 128k, to accommodate a large membership list – see the feature on page 63 for further expansion possibilities.

AppleWorks can sort data by any category you nominate, and you can add a mail merge facility to ease the chore of mail shots. We'll be looking in detail at the add-ons available for AppleWorks in the next issue of *Apple User*.

Mystery cards

YOU recently printed two letters from readers who have "mystery" 80 column cards. If a reader sends us a picture of the card (just lay it on a photocopier) we can probably say which "official" card it is a copy of, and help with his problems. For our address, see our ad in this issue.

Mr J.L. Risdon should try switching to 40 columns with **PRINT CHR$(26);"1"** *or* **PRINT CHR$(26);"4"** *in case his card is a Videx workalike.* – **Robert P. Sather, Technical Director, Dark Star Systems.**

Shift mode

I AM running an Omnivision 80 column card in my Apple II Europlus, and would like to have "proper" shift key operation.

The Omnivision manual's instructions are to run a wire from the "appropriate keyboard solder pad to the pad on the upper left corner of Omnivision".

I am fairly sure that the "appropriate keyboard solder pad" can be translated as Pin 24 on P1, the keyboard PCB connector, but I can see no obvious pad on the upper left of Omnivision.

What I can see is Pin 7 of the output connector on the top right of Omnivision, marked "Lowercase". Might this be what I'm looking for?

I don't like to "suck it and see", having blown up one motherboard in living memory. – **M. Billing, Devon.**

● We are not familiar with the Omnivision 80 column card, but it does sound to be the correct place. Perhaps a knowledgeable reader can help?

Hanging AppleWorks

WE would very much appreciate your advice on a problem that has frustrated and baffled us.

We are a research and databank service for foreign media and our work involves using the database and word processor sections of AppleWorks. We started two years ago with a 64k Apple IIe and twin disc drives. We added on 64k – and there are problems started.

After an hour or so of operation (we have a fan) extraneous characters start appearing on the screen. Sometimes cursor movement clears them, but at other times the system hangs and has to be restarted, with consequent loss of files on the desktop.

Saving frequently doesn't help: Several entire discs have been lost so far, and the system often hangs during the Save operation. The problem eases, but does not go away, when we remove the memory card.

Also, the same AppleWorks program and files work perfectly on our other unit, a IIc.

We have had four different service firms, three of them Apple dealers, look into our IIe system. One of them thought our disc drives were at fault, so we replaced them with an original Duodisk.

Others could not find anything wrong with the system, including the drives. We have tried five different 64k Extended cards, with identical results.

Can you help? We would desperately like to upgrade our system – or dump it. – **Sajid Rizvi, Richmond.**

● We suspect the power supply – paradoxically, it may be better to remove the fan. It may also be worth cleaning the slots and the fingers of the cards.

Newsroom graphics

*IN reply to G.Inglott's letter about graphic programs (*Apple User *June, 1987) moving graphics into Newsroom is possible with a program called Clipcapture.*

I bought my copy direct from the USA, but I now notice that it is available from MGA MicroSystems, 140 High Street, Tenterden, Kent at £23.99. – **Den James, Gloucester.** □

Send your letters to:
Feedback,
Apple User,
Europa House,
68 Chester Road,
Hazel Grove,
Stockport SK7 5NY

BACK ISSUES

Catch up on articles you may have missed. Back issues from January 1987 are available at £1.75.

April 1987

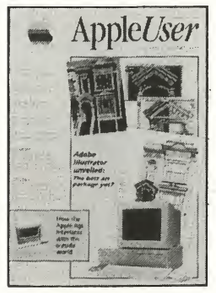
Reviews; Pinpoint Pop up Spelling Checker, Pinpoint Ram Enhancement, Gutenberg Word Processor – Programming; Using DDT in CP/M, Pascal Printer Control Unit in action – Utilities; Making more of Print Shop's Graphics, Encoding continued – Application; Low-cost Image Analysis – Desk Top Publishing; Macs in the newspaper industry, an introduction to DTP, book on PageMaker techniques – Fun & Games; F-15 Strike Eagle, Crusade in Europe, Alternate Reality, The City, Hacker II – Feedback.

May 1987

Reviews; Mousestuff for Pascal, Swyftware on disc, Multiscribe 2 – Fun & Games; Prince (colour printer kit), Brian Clough's Football Fortunes, Hollywood Hijinx, Starglider and King of Chicago – Programming; Pascal File Control System, CP/M non-disc calls, Multi-choice quiz game – Utilities; Toolkit Assembler from the Flipper, Graphics library cursor routine, encoding techniques – Desk Top Publishing; Quick Print Franchising, Fancy Fonts – PLUS all the latest Apple news and your letters.

June 1987

Reviews: ObjectLogo, IIgs microprocessor, Microsoft's Works, the WIMP environment – Fun & Games; Bureaucracy, Jewels of Darkness, Autoduel – Programming; Pascal File Control System, customising AppleWorks, CP/M disc functions – Utilities; Debugging on-screen listings, Working with Dos sectors, Radio teletype receiver, Machine code tracer – Building a Mac software library, Designing a coding system, Mac Shareware, First impressions of the Mac SE – PLUS news and Feedback.



July 1987

Reviews: Adobe Illustrator, LaserWriter, VIP Professional, Microsoft's Word and the Beagle Bros' Prodos compiler – Fun & Games: Dark Castle, Moebius, Silicon Dreams and Guild of Thieves – Programming: Pascal Tutorial, CP/M BDOS function calls, Shape Chaser (a shape table utility), Screen Editor for Basic, Dos Info command utility – Honourware, Biorhythms from Spreadsheets, Mac problems solved, Opening up the Mac, Desktop publishing in South Africa, News and Feedback.

August 1987

Reviews: GraphicWriter, Music Studio, Visualiser, Quark XPress, Guide – Fun & Games: Movie Monster, Ogre, Electric Crayon – Programming: Pascal Tutorial, CP/M word counting utility, label-making program – 65C816 update, the Infocom interview, customising the Mac's control panel, Stemko, an Apple-controlled environment, the case for honorware, expert hints for desktop publishing beginners, Problem Page looks at the Finder and copy protection – PLUS all the latest Apple news and your letters.

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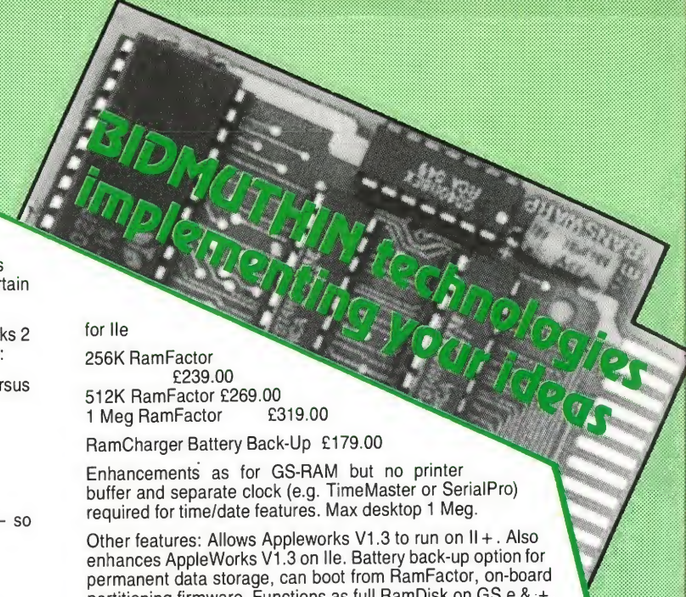

APPLEWORKS AND IIGS APPLEWORKS 2 EXPANDER

The Appleworks 2 Expander is an enhancement program for Appleworks 2 which enhances and expands Appleworks 2 when used with certain memory cards.

Here's a list of the AppleWorks enhancements created by the AppleWorks 2 expander when used with GS-RAM and GS-RAM Plus cards on the IIGS:

- Word Processor and database Clipboard expanded to 2,042 lines (versus 250)
- Up to 22,600 lines in the Word Processor (versus 7,250 lines)
- Up to 22,600 records in the Data Base (versus 6,350 records)
- Variable size printer buffer
- On-screen time display
- Automatic time/date entry into the database
- Print-file cache (i.e. ALL of AppleWorks is loaded into memory — so doesn't access the disk to print)
- Expander options menu
- Multiple disk file-saving capability
- AppleWorks Desktop expansion to 8 Meg

Other features: GS-RAM and GS-RAM Plus are totally compatible with and surpass the Apple GS Memory card standard.

The Appleworks 2 expander is supplied FREE with GS-RAM and GS-RAM Plus.

Prices (excluding VAT)

GS-RAM 256K	£169.00
GS-RAM 512K	£209.00
GS-RAM 1 Meg	£269.00
GS-RAM 1.5 Meg	£319.00
GS-RAM Plus 1 Meg	£399.00
GS-RAM Plus 2 Meg	£629.00
GS-RAM Plus 3 Meg	£849.00
GS-RAM Plus 4 Meg	£1059.00
GS-RAM Plus 5 Meg	£1259.00
GS-RAM Plus 6 Meg	£1419.00
GS-RAM Plus7-8 Meg	£CALL
256K Upgrade Kit	£40.00
1 Meg Upgrade Kit	£240.00

The AppleWorks 2 Expander also works with, and is supplied FREE with these other memory cards:

for IIC

Z-RAM Ultra 2 — 256K	£269.00
Z-RAM Ultra 2 — 512K	£309.00
Z-RAM Ultra 2 — 1 Meg	£389.00
Z-RAM Ultra 3 — 256K	£329.00
Z-RAM Ultra 3 — 512K	£369.00
Z-RAM Ultra 3 — 1 Meg	£449.00
65C816 16-Bit Option	£79.00

Enhancements as for GS-RAM and GS-RAM Plus but maximum desktop is 727K (1 Meg Z-RAM Ultra) and printer buffer is fixed at 64K. The in-built clock also provides file date/time stamping as well as other time options. AppleWorks is fully pre-loaded into RAM. Also provides most of the enhancements for ALL earlier versions of AppleWorks.

Other facilities: 16-Bit option, clock.
Z-RAM Ultra 3 includes Z-80 co-processor and CP/M.

for IIe

256K Ramworks III	£199.00
512K Ramworks III	£239.00
1 Meg Ramworks III	£319.00
1.5 Meg Ramworks III	£469.00
3 Meg Ramworks III	£1,299.00

Enhancements as as for Z-RAM Ultra, but separate clock (e.g. TimeMaster or SerialPro) required for time/date features and printer buffer only works with Super Serial Card (or SerialPro).

Other features: 80 column display built in. (Replaces 80 col card). RGB option.

for IIe

256K RamFactor £239.00
512K RamFactor £269.00
1 Meg RamFactor £319.00

RamCharger Battery Back-Up £179.00

Enhancements as for GS-RAM but no printer buffer and separate clock (e.g. TimeMaster or SerialPro) required for time/date features. Max desktop 1 Meg.

Other features: Allows Appleworks V1.3 to run on II+. Also enhances AppleWorks V1.3 on IIe. Battery back-up option for permanent data storage, can boot from RamFactor, on-board partitioning firmware. Functions as full RamDisk on GS,e & +.

OTHER HARDWARE

Heavy Duty Power Supply (e/+)	£75.00
IIc System Clock (c)	£49.00
Phasor Music/Speech Synthesizer (e/+/GS)	£179.00
Pinpoint Apple IIe Enhancement Kit (e)	£29.00
Pro-App 20 Mb Hard Disk (IIc/GS/e, Mac, Mac+)	£995.00
Serial Pro — Serial Card + Clock (e/+/GS)	£139.00
TimeMaster II H.O. Clock (e/+)	£99.00
TransWarp Accelerator (IIe/+)	£279.00
Viewmaster 80 (80 cols on II+)	£139.00
Z-80+ card inc. CP/M (GS/e/+)	£139.00

IIGS SOFTWARE

AutoWorks 2.0 — Macros etc. (GS/e/c)	£49.00
DazzleDraw — dble hi-res graphics (e/c)	£69.00
Document Checker — fast spell checker (GS/e/c)	£69.00
FontWorks — for AppleWorks (GS/e/c)	£49.00
InfoMerge — for AppleWorks (e/c)	£29.00
Keyplayer Macros (reqs Pinpoint) (GS/e/c)	£49.00
MultiScribe — GS Wordprocessor (GS)	£99.00
MultiScribe 2.0 Wordprocessor (e/c)	£69.00
PinPoint 2.0 — Desktop accessories (GS/e/c)	£89.00
PinPoint Toolkit (inc RunRun) (GS/e/c)	£69.00
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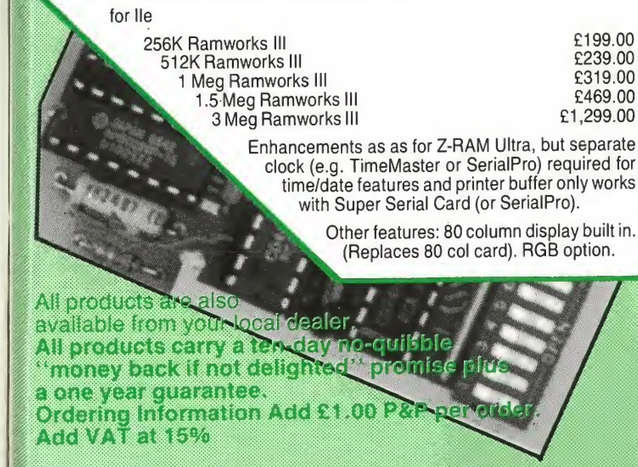
Visicalc Expander Disk (e/c)	£29.00
Visualiser — e/c — Graphs AppleWorks (e/c)	£79.00
Visualiser — GS — Graphs AppleWorks (GS)	£89.00



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